ATARA BIO®

Investor Presentation

May 4, 2021

Nasdaq: ATRA

Forward-Looking Statements

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Pioneering Off-the-Shelf, Allogeneic T-cell Immunotherapies

Our mission is to transform the lives of patients with serious diseases through pioneering science, teamwork and a commitment to excellence

Atara mourns the loss of Jessica, who passed away on September 25, 2019 while awaiting a new heart and kidney transplant. Her memory continues to fuel our urgency in developing new therapies for devastating diseases.

Highly Experienced Executive Team Dedicated to Transforming the Lives of Patients

Pascal Touchon
President and
Chief Executive Officer

NOVARTIS
gsk
SANOFI
SERVIER

Utpal Koppikar
Chief Financial Officer

GILEAD
AMGEN

Jakob Dupont, M.D.
Head of Research and
Development

Genentech
Roche
OncoMed
STANFORD UNIVERSITY
Memorial Sloan Kettering Cancer Center
gossamerbio

Joe Newell
Chief Operations Officer

ALEXION
AMGEN

AJ Joshi, M.D.
Chief Medical Officer

Allergan
Synageva BioPharma
Dedicated to Rare Diseases®
genzyme

Kristin Yarema, Ph.D.
Chief Commercial Officer

NOVARTIS
McKinsey & Company
AMGEN

ATARA BIO®

We Are a Leading Allogeneic T-Cell Immunotherapy Company

Differentiated Allogeneic Cell Therapy Platform

Scalable EBV T-cell platform and technologies to develop multiple allogeneic cell therapies

Tab-cel®: First-In-Kind, Late-Stage, Oncology Program

Working toward completing BLA submission in Q3 2021, pending alignment with FDA

ATA188: Potentially Transformative MS Treatment in Randomized Controlled Trial

Placebo-controlled data expected within ~12 months, to enable pivotal studies and partnering opportunities

Next-Gen Allogeneic CAR T Portfolio, Validated by Bayer Collaboration on Mesothelin-Targeted CAR T

Competitive programs designed to address current limitations of autologous and allogeneic CAR T

Proven Technical Capabilities

Advanced process science and wholly owned pre-commercial manufacturing capabilities attractive to potential partners

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EBV = Epstein-Barr Virus; BLA = Biologics License Application; BTD = Break Through Designation

We Are Rapidly Advancing Across Multiple Fronts

	Today	Within Next 18 months
Tab-cel®	Working toward BLA submission	**Potential for first allogeneic T-cell immunotherapy on the market in 2022**
ATA188	Growing open label clinical dataset suggesting transformative potential in MS	**Disability improvement data from RCT has potential to unlock multi-billion-dollar opportunity**
CAR T	Technologically differentiated portfolio of high-potential, preclinical assets	**Multiple programs with clinical data in both liquid and solid tumors**
Allogeneic T-cell Platform Expertise	Integrated, proven, pre-commercial manufacturing and R&D platform	**Commercially scaled and validated allogeneic T-cell therapy platform**

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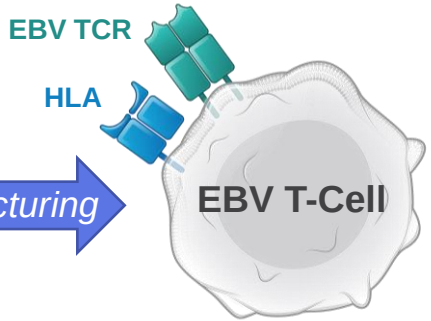
BLA = Biologics License Application; RCT = Randomized Controlled Trial

Platform Potential to Treat a Wide Range of EBV-Associated Diseases or Hematological / Solid Tumors Through Engineered CAR or TCR

EBV-Targeting T-Cell Products: Tab-cel® and ATA188

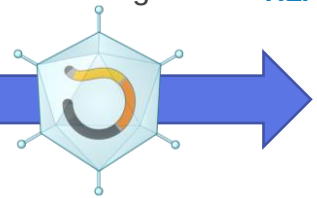
Healthy Donor Cells → *manufacturing* → EBV T-Cell

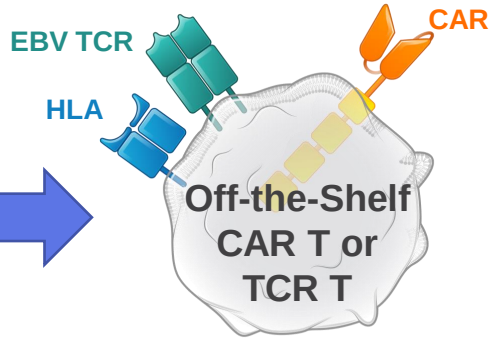


- ✓ Minimal HLA matching needed
- ✓ Designed to target root cause of EBV-driven diseases
- ✓ Favorable safety profile
- ✓ Robust manufacturing process
- ✓ No genetic engineering

Engineered Oncology Products: Next-gen CAR T or TCR T

Next-Gen CAR Technologies





- ✓ Retains beneficial features of EBV T-cell
- ✓ CAR-targeted activity and durability
- ✓ Can be modified to express engineered receptors to armor CAR T for solid tumors

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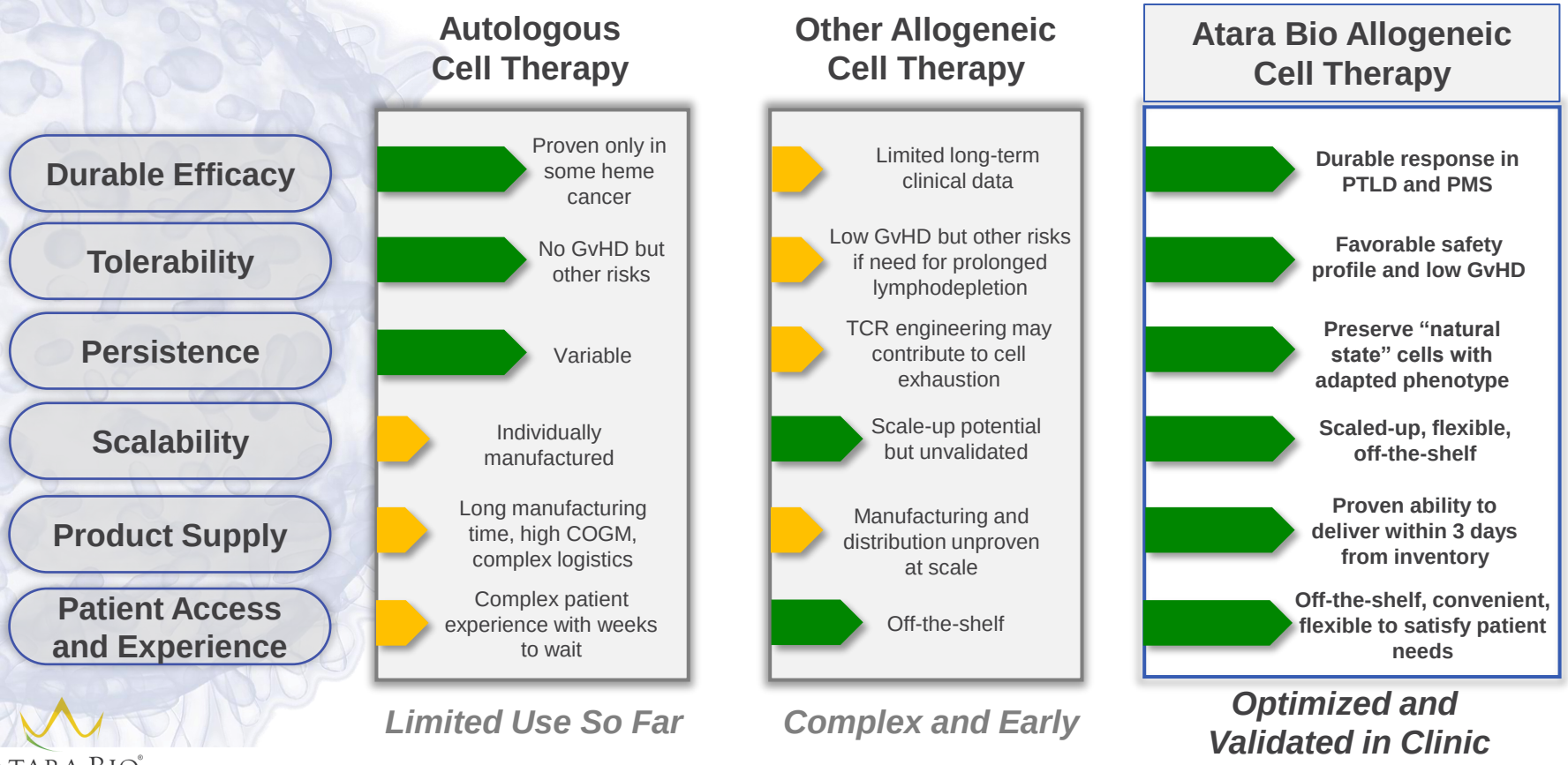
EBV = Epstein-Barr Virus; HLA = Human Leukocyte Antigen; CAR = Chimeric Antigen Receptor; TCR = T-cell Receptor

Our Vision is to Transcend the Limitations of Current Cell Therapy by Harnessing the Power of EBV T-cells



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GvHD = Graft Versus Host Disease; TCR = T-cell Receptor; PMS = Progressive Multiple Sclerosis; COGM = Cost of Goods Manufactured

Robust T-Cell Immunotherapy Pipeline

Program	Indication	Target	Preclinical	Phase 1	Phase 2	Phase 3	Registration	Next Milestone
Tab-cel® (tabelecleucel)	RR EBV+ PTLD following HCT and SOT	EBV	ALLELE Study					**Q3 2021**: Rolling BLA completion
	Multi-Cohort: EBV+ cancers(1)	EBV						**2023**: Ph2 Study data expected
	Nasopharyngeal carcinoma(2) MERCK	EBV						**2021**: Add'l translational data
ATA188	Progressive MS	EBV(3)		RCT				**H2 2021**: 2-yr clinical data OLE & trans data
ATA2271	Autologous CAR T **Solid tumors**(4,5,6) BAYER	Mesothelin						**Q4 2021**: Safety/efficacy data
ATA3271	Off-the-shelf, allogeneic CAR T **Solid tumors**(4,6) BAYER	Mesothelin						**Q2 - Q3 2022:** IND filing
ATA3219	Off-the-shelf, allogeneic CAR T **B-cell malignancies**	CD19						**Q4 2021 - Q1 2022**: IND filing
Other Programs	**AML, B-cell malignancies, solid tumors, and infectious diseases**	Various						Undisclosed

These investigational agents are not approved by any regulatory agencies. Efficacy and safety have not been established.
EBV+ PTLD: EBV-Associated Post-Transplant Lymphoproliferative Disease; RR: rituximab relapsed/refractory; HCT: allogeneic hematopoietic cell transplant; SOT: solid organ transplant
Other programs: ATA2321 (AML), ATA2431 (B-cell malignancies), and ATA368 (HPV)

(1) Phase 2 multi-cohort initiated in Q3 2020, with possible indications including EBV+ PTLD with CNS involvement, EBV+ PID/AID LPD, EBV+ LMS and other potential EBV-associated diseases
(2) Phase 1b/2 study in combination with anti-PD-1 therapy, KEYTRUDA® (pembrolizumab), in patients with platinum-resistant or recurrent EBV-associated NPC.
(3) Targeted antigen recognition technology; Phase 2 Randomized Controlled Trial
(4) Mesothelin is expressed at high levels on the surface of cells in aggressive solid tumors including mesothelioma, triple-negative breast cancer, esophageal cancer, pancreatic cancer and non-small cell lung cancer
(5) Atara's CAR T collaboration with MSK will focus on development of a next-generation, mesothelin-targeted CAR T using novel 1XX CAR signaling and PD-1 dominant negative receptor (DNR) checkpoint inhibition technologies.
(6) Worldwide license agreement and research, development and manufacturing collaboration with Bayer to develop Atara's allogeneic off-the-shelf mesothelin CAR T program (ATA3271) and autologous program (ATA2271)

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Our Platform is Nearing Commercial Scale Readiness

- Dedicated, expandable manufacturing facility
  - Flexibility to produce multiple T-cell and CAR T immunotherapies
  - Designed to meet global regulatory standards
  - Commercial manufacturing validation activities near completion
- Robust manufacturing process with data confirming potential scale up into perfusion bioreactors enabling biologics-like Cost of Goods Manufactured to supply thousands of patients
- Product being delivered rapidly to patients across three continents from finished product inventory

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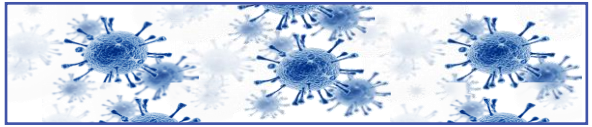
Three Strategic Priorities Driving Long-Term Value

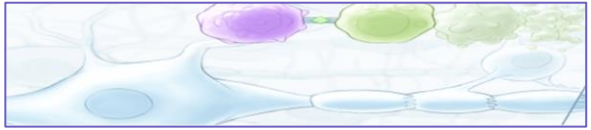
Tab-cel®



First-in-Kind Allogeneic T-Cell Therapy Preparing for Historic Regulatory Filing

- BTD program for high unmet need in ultra rare population, with meaningful label expansion potential
- Compelling efficacy profile in Phase 2 and Phase 3 IA with favorable safety profile
- **Next Step:** Working toward completing BLA submission in Q3 2021, pending alignment with FDA

ATA188



Transformative MS Treatment in Randomized Controlled Trial (RCT)

- High unmet medical need for the ~1 million progressive MS patients worldwide
- Clinical data support potential to halt or reverse disease progression in progressive MS
- **Next Step:** Phase 1 translational data and 2-year clinical data from Phase 1 OLE (H2 2021)

Next-Gen CAR T

Next-Generation Allogeneic CAR T Programs Leveraging EBV T Cells

- Urgent need for new treatment options across solid and liquid tumor indications
- Portfolio of next-generation CAR T with robust pre-clinical evidence supporting advanced capabilities in solid tumors
- **Next Step:** First allogeneic CAR T program IND (Q4 2021 / Q1 2022)

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IA = Interim Analysis
MS = Multiple Sclerosis
CAR = Chimeric Antigen Receptor

OLE = Open-label Extension
BTD = Break Through Designation
EBV = Epstein-Barr Virus

BLA = Biologics License Application
IND = Investigational New Drug

Upcoming Key Catalysts Over the Next 18 Months

Tab-cel® (tabelecleucel)	Complete FDA Biologics License Application (BLA) rolling submission for patients with EBV+ PTLD	**Q3 2021**
	Present Phase 3 ALLELE data at an appropriate congress	**Q4 2021**
	Submit EU Marketing Authorization Application (MAA) for patients with EBV+ PTLD	**Q4 2021**
	Anticipated U.S. approval of BLA for patients with EBV+ PTLD	**H1 2022**
	Anticipated EU approval of MAA for patients with EBV+ PTLD	**H2 2022**
ATA188	Present Phase 1 translational data and 2-year clinical data from Phase 1 OLE study in an appropriate forum	**H2 2021**
	Conduct interim analysis to assess efficacy and safety from Phase 2 randomized, double-blind, placebo-controlled study in patients with progressive forms of MS	**H1 2022**
	Complete enrollment of Phase 2 randomized, double-blind, placebo-controlled study in patients with progressive forms of MS	**H1 2022**
ATA2271	Present top-line Phase 1 data for mesothelin-targeted autologous CAR T for patients with advanced mesothelioma	**Q4 2021**
ATA3271	Submit next-generation off-the-shelf, mesothelin-targeted allogeneic CAR T IND for patients with advanced mesothelioma	**Q2 2022 / Q3 2022**
ATA3219	Submit next-generation off-the-shelf, allogeneic CD-19 targeted CAR T IND for patients with B-cell malignancies	**Q4 2021 / Q1 2022**

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Atara is Well-Capitalized With Planned Cash Runway Into 2023

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Atara Biotherapeutics, Inc.

$435.2 million
Cash, cash equivalents, and short-term investments as of March 31, 2021

84.1 million
Shares Outstanding as of March 31, 2021 *

$81.8 million
Q1 2021
Operating Expenses

$65.7 million
Q1 2021
Net Cash Used in Operating Activities

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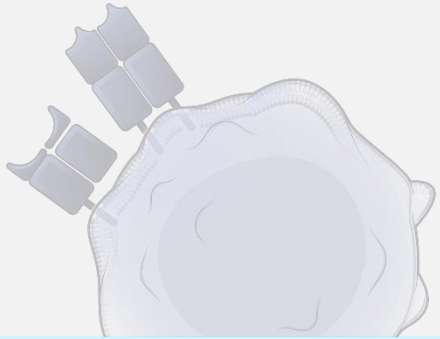
* Does not include 7.8 million of pre-funded common stock warrants

Atara Strategic Priorities to Create Value: Tab-cel®

Tab-cel® (tabelecleucel)

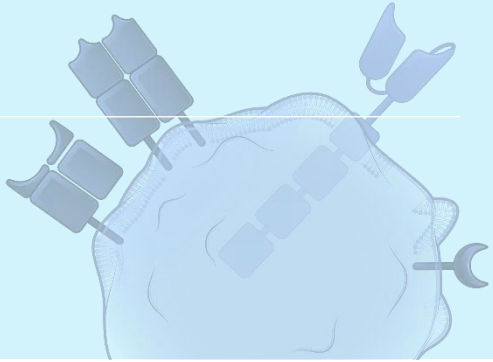
Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

FDA breakthrough designation and EMA PRIME for EBV+ PTLD



ATA188

CAR T



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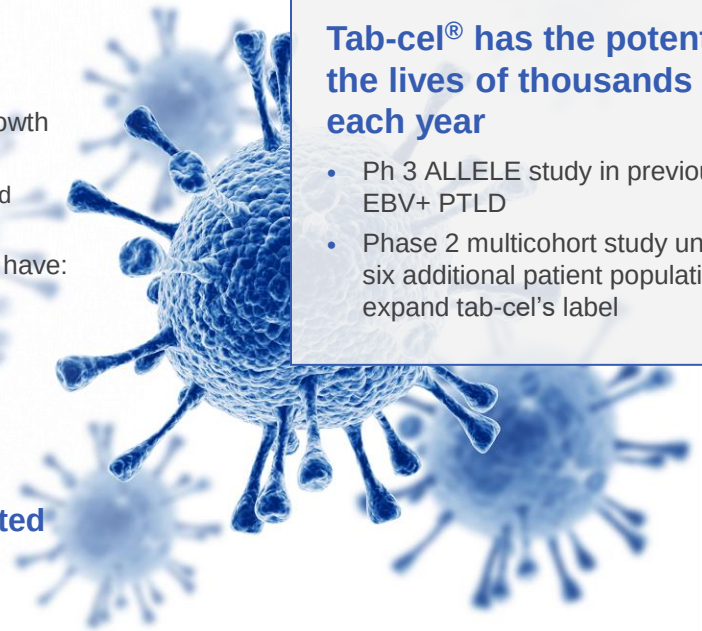
A Common Virus—EBV—Causes Rare and Serious Cancers In Patients With Impaired Immune Function

EBV is a common driver of IA-LPDs

- EBV is a ubiquitous yet typically dormant virus
  - Once infected, healthy patients harbor lifelong infection that is usually kept in check by their immune systems
- In patients with impaired immune function, uncontrolled growth of EBV-infected cells can lead to lymphomas (IA-LPDs)
  - Such EBV-driven cancers have no approved therapies and poor prognosis with limited life expectancy for patients
- Patients with impaired immune function include those who have:
  - Conditions requiring immunosuppressive medication (e.g. post-transplant patients, patients with serious autoimmune diseases)
  - Diseases that lower immunity (e.g. HIV)
  - Inborn genetic immune deficiency (e.g. PIDs)

Tab-cel® specifically targets and kills EBV-infected cells, addressing disease at the source



Tab-cel® has the potential to transform the lives of thousands of patients each year

- Ph 3 ALLELE study in previously treated EBV+ PTLD
- Phase 2 multicohort study underway covering six additional patient populations, with aim to expand tab-cel's label

EBV: Epstein Barr virus; IA-LPDs: Immunodeficiency-associated lymphoproliferative disorders; PIDs: Primary immunodeficiencies
AID = acquired immunodeficiency
PID = primary immunodeficiency
Phase 2 multicohort study populations include: AID-LPD; PID-LPD; 1L treatment inappropriate PTLD; CNS PTLD; sarcoma, including LMS; viremia with HLH

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EBV-Associated Post-Transplant Lymphoproliferative Disease
Aggressive, Often Deadly Cancer with No Approved Therapy

Rare B-cell lymphoma that occurs in immunosuppressed patients after transplant

- Average age under 40 years vs. around 65 years for NHL
  - **Bone marrow transplant (HCT)**
    EBV+ PTLD risk up to recovery of immune system (~1 year)
  - **Solid organ transplant (SOT)**
    Chronic risk of PTLD from immunosuppression; Highest risk within ~1 year of transplant(1)
- High mortality in rituximab ± chemo relapsed/refractory patients
  - **Median survival**
    HCT: 1.7 months(2)
    SOT: 3.3 months(3)

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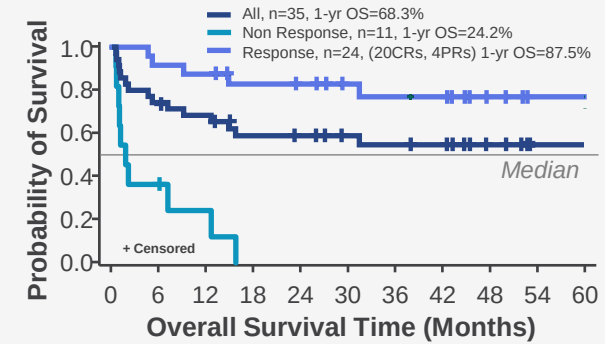
NHL: Non-Hodgkin Lymphoma

(1) Dierickx D, Habermann TM. *N Engl J Med*. 2018 Feb 8;378(6):549-562.
(2) Socié, G. et al. In: Proceedings of the 46th Annual Meeting of the European Society for Blood and Marrow Transplantation; 2020 Aug 30-Sep 2; Virtual. EBMT 2020; Abstract B208
(3) Zimmermann, H. et al. Presented at the 24th Congress of European Hematology Association; 2019 June 13; Amsterdam, The Netherlands. EHA 2019; Poster

Tab-cel® – Long-Term Outcomes for Patients with EBV+ PTLD in Phase 2 and EAP Studies[1,2]

Phase 2 HCT



Number at Risk (Event):

All	35 (0)	26 (9)	23 (11)	18 (14)	17 (14)	14 (14)	13 (15)	12 (15)	6 (15)	3 (15)	3 (15)
Non Response	11 (0)	4 (7)	2 (8)	0 (10)							
Response	24 (0)	22 (2)	21 (3)	18 (4)	17 (4)	14 (4)	13 (5)	12 (5)	6 (5)	3 (5)	3 (5)

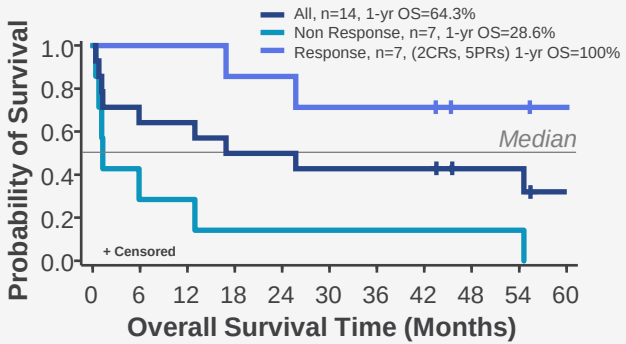
Phase 2 overall survival at 2 years in responders

83%

EAP overall survival at 2 years for all patients[3]

79%

Phase 2 SOT



Number at Risk (Event):

All	14 (0)	9 (5)	9 (5)	7 (7)	7 (7)	6 (8)	6 (8)	6 (8)	4 (8)	4 (8)	2 (9)
Non Response	7 (0)	2 (5)	2 (5)	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)	0 (7)
Response	7 (0)	7 (0)	7 (0)	6 (1)	6 (1)	5 (2)	5 (2)	5 (2)	3 (2)	3 (2)	2 (2)

Phase 2 overall survival at 2 years in responders

86%

EAP overall survival at 2 years for all patients[3]

81%

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Few treatment-related serious adverse events (SAEs): 12 possibly related Serious Adverse Events (SAEs) among 173 patients: no infusion related toxicities, no CRS (cytokine release syndrome) and three possibly related graft vs. host disease (GvHD); Safety data on file as of December 2017.

(1) NCT00002663 and NCT01498484; Prockop, S., *et al.* EHA 2018.

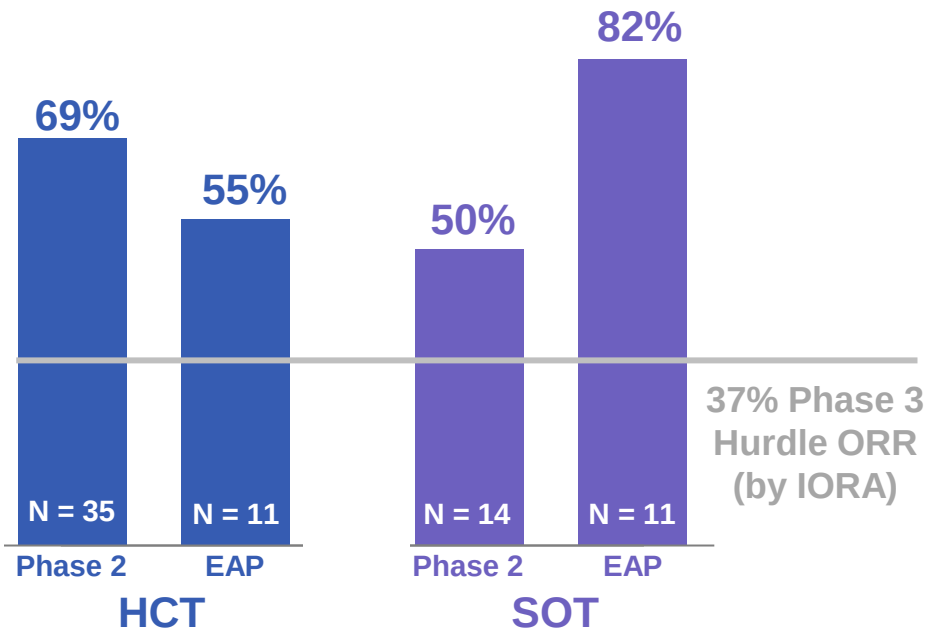
(2) Prockop, S., *et al.* Abstract 4071, ASH 2019.

(3) In a subgroup of 22 patients who would have likely met eligibility criteria for Atara's ongoing tab-cel® Phase 3 studies

Tab-cel® Achieved 50% Objective Response Rate in Pivotal Phase 3 Study Interim Analysis by Independent Oncologic and Radiographic Assessment

Investigator Assessed: Phase 2 and EAP ORR

for EBV+ PTLD patients who failed rituximab



Interim Analysis by IORA for Phase 3 Pivotal Study

- Conducted in Q3 2020
- Included analysis of all patients with 6 month follow up for durability of response
- 50% ORR by IORA across HCT and SOT cohorts
- Safety: No new safety signals versus prior tab-cel studies

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EAP: Expanded Access Protocol; HCT: allogeneic hematopoietic cell transplant; SOT: solid organ transplant; Objective response rate (ORR) = complete response (CR) + partial response (PR)
IORA = Independent Oncologic and Radiographic Assessment

Regulatory Progress for Tab-cel®

- Agreement for rolling BLA submission
- Completed the Preclinical Module 4 and ready to initiate a rolling BLA
- Agreement to use prior studies as supportive data in BLA filing
- Agreement on the follow-up period for duration of response needed for currently enrolled patients in pivotal study (ALLELE)
- Active discussions with the FDA on CMC Module 3, including methodologies to assess comparability between the product used in the pivotal ALLELE study and the intended commercial product
- Working toward completing BLA submission in Q3 2021, pending alignment with FDA

- Favorable discussion with PRIME in Q3 2020 on regulatory strategy
- Pediatric Investigation Plan (PIP) approved in December 2020
- Submitted a letter of intent to EMA starting the process for a submission of an EU Marketing Authorization Application
- On track for EU MAA submission in Q4 2021

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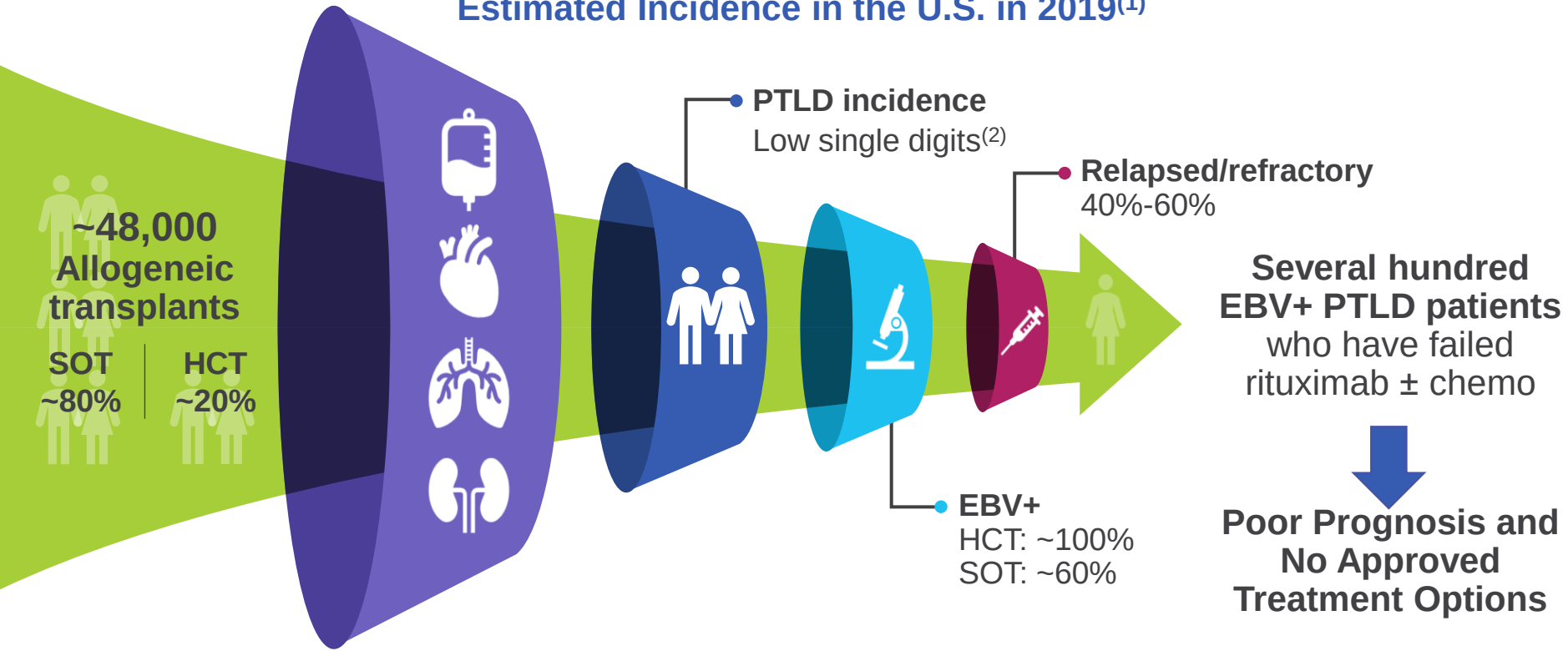
BLA = Biologics License Application; MAA = Marketing Authorization Application; CMC = Chemistry, Manufacturing and Control

Tab-cel® EBV+ PTLD – Attractive Ultra-Rare Disease Market

Estimated Incidence in the U.S. in 2019(1)



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(1) Atara literature review and team analysis
(2) In SOT segment, there is significant variation by organ type. In HCT segment, variation is driven by conditioning regimens, EBV monitoring and prophylactic treatment.

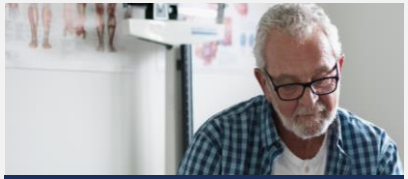
Market Dynamics in EBV+ PTLD Are Favorable For Rapid Uptake Of A Transformative Targeted Therapy

Previously treated EBV+ PTLD is our first planned indication for tab-cel among IA-LPDs

Ultra-rare B-cell lymphoma occurring in immunosuppressed post-transplant patients

Average age of onset <40 years

Several hundred addressable patients per year in US with no approved therapeutic solutions



HIGH UNMET MEDICAL NEED

- ~50% of EBV+ PTLD patients fail initial treatment
- ~2-3 months median survival after failing rituximab with or without chemo
- Many patients suffer chemo-related side effects, including mortality

CLEAR PATIENT POPULATION AND CUSTOMER INTEREST

- High rates of diagnosis and treatment for PTLD
- Guidelines and publications cite need for additional effective options in R/R disease and already include EBV-CTL

STRONG COMPETITIVE POSITION

- No approved therapies and today's options do not specifically target EBV
- Phase 3 tab-cel® well ahead of a few other therapies being developed in PTLD

PATH TO PATIENT ACCESS

- Ultra-rare, life-threatening and acute disease
- Significant cost burden to manage PTLD
- Increasing payor experience covering cell and gene therapies
- Strong value proposition

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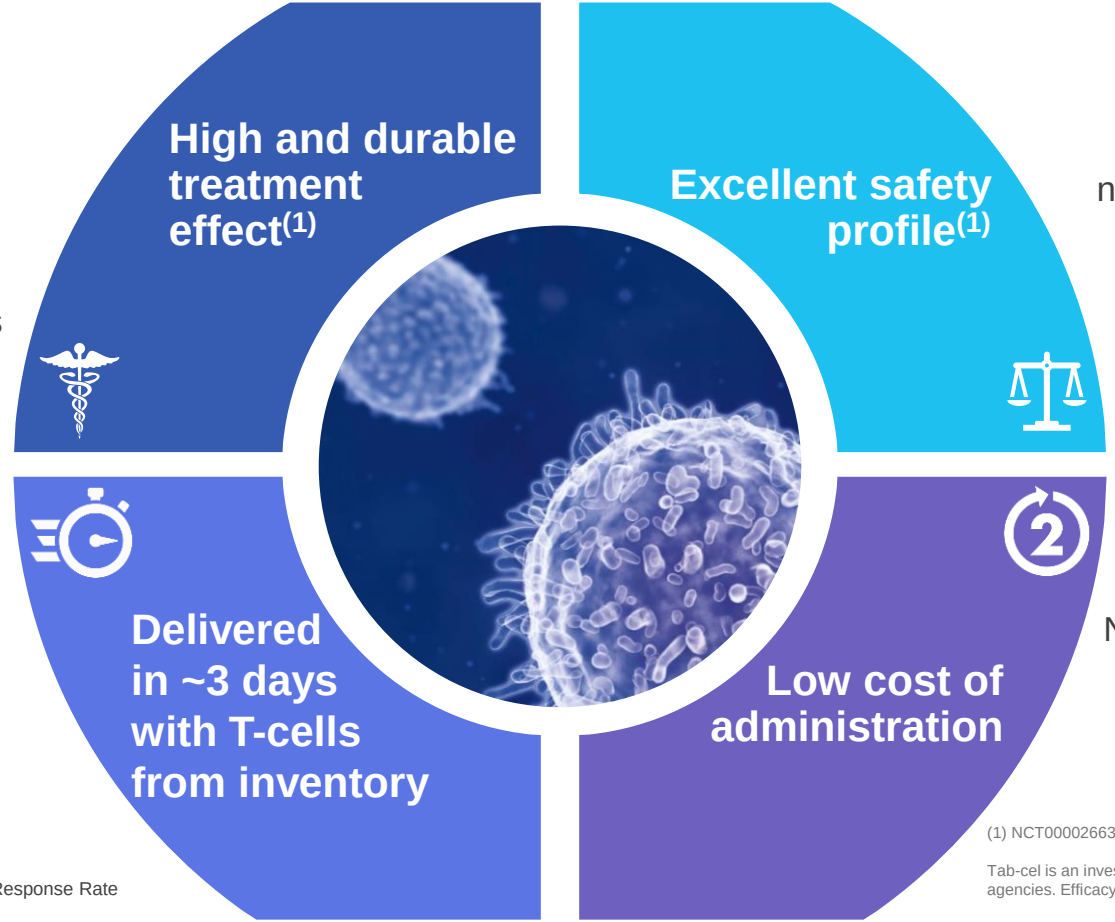
IA-LPDs: Immunodeficiency-associated lymphoproliferative disorders

Tab-cel® – Compelling Value Proposition for EBV+ PTLD Patients and Healthcare System

≥50% ORR in Phase 2, EAP, and Phase 3 IA

>80% survival at 2 years in responders in Phase 2 and EAP

No approved treatments today



No CRS or neurotoxicity observed

No treatment-related mortality

Off-the-shelf therapy for patients in urgent need

Anticipate sufficient inventory to cover >95% of patients at time of launch

No pretreatment required

5-10 minute IV infusion

2-hour monitoring

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ORR = Objective Response Rate

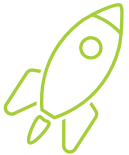
(1) NCT00002663 and NCT01498484; Prockop, S., *et al.* EHA 2018.

Tab-cel is an investigational agent not approved by any regulatory agencies. Efficacy and safety have not been established.

The Unique Attributes of PTLD and Tab-cel® Allow for a Targeted, Highly Efficient Commercialization Model

PTLD ecosystem

- Finite number of transplant centers and patients monitored routinely
- Personalized nature of tab-cel facilitates Atara/HCP dialogue
- HCPs comfortable with virtual communications due to COVID-19
- Growing experience with cell therapy among institutions
- High-cost burden and severe prognosis with limited therapeutic options



Tab-cel's highly efficient launch

- Proactive HCP engagement early in patient journey
- Rapid support in any care setting, including outpatient
- Effective virtual engagements
- Patient identification
- Highly-skilled and nimble field staff

Atara is focusing on commercial buildout in the US and seeking a European commercialization partner

ATARA BIO®

Tab-cel® – Additional Phase 2 is Underway Which May Support Meaningful Label Expansion

EBV-205 Phase 2 Study

Label expansion opportunity for tab-cel

- We initiated a tab-cel Phase 2 multi-cohort study in the third quarter of 2020
- EBV is the common driver of these diseases and tab-cel® targets them at the source

Study Populations

- EBV+ PID-LPD
- EBV+ AID-LPD
- EBV+ PTLD CNS
- 1L EBV+ PTLD *(Inappropriate for Current Therapies)*
- EBV+ sarcoma, including LMS
- CAEBV or EBV viremia with HLH

EBV+ AID-LPD and EBV+ PID-LPD

- **High unmet need**
- **Large potential patient population**
- **Similar mechanism of disease to PTLD**

Data presented at ESMO 2020 show ORR of 33.3% – 37.5% in 2nd Line EBV+ AID-LPD and PID-LPD

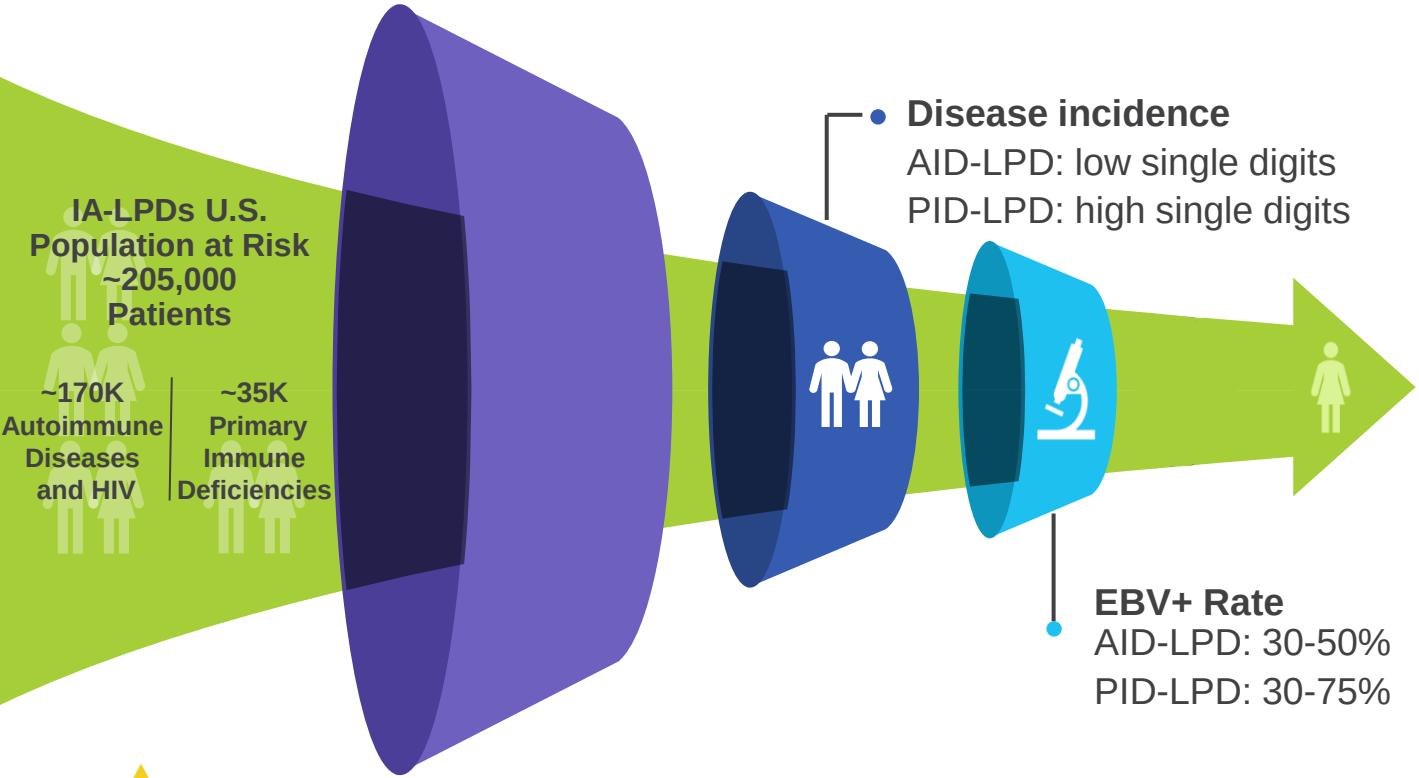
EBV viremia data presented at ASH 2020 show 50%-80% ORR and overall survival at one year of 100%, for a median follow-up of 14.6 months

LPD = lymphoproliferative disease ;PID = primary immunodeficiency; AID = acquired immunodeficiency; CNS = central nervous system; LMS = leiomyosarcoma; CAEBV = chronic active Epstein-Barr virus; HLH = hemophagocytic lymphohistiocytosis; ORR = Objective Response Rate

ATARA BIO®

EBV+ IA-LPDs(1) Present a Meaningful Opportunity to Expand Potential Tab-cel® Label

U.S. Multi-Cohort Potential Label Expansion Populations – 2019(2)



Potentially addressable population of **a few thousand** 1L and 2L patients

(1) Immunodeficiency-associated lymphoproliferative diseases
(2) Atara market research
AID = acquired immunodeficiency
PID = primary immunodeficiency

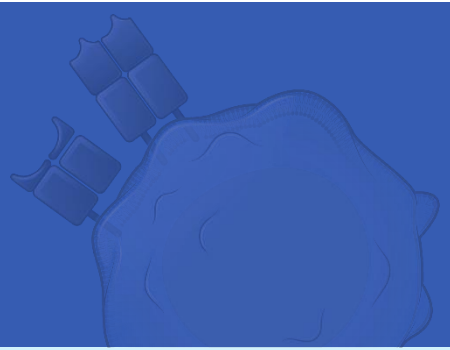
ATARA BIO®

Atara Strategic Priorities to Create Value: ATA188

Tab-cel® (tabelecleucel)

Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

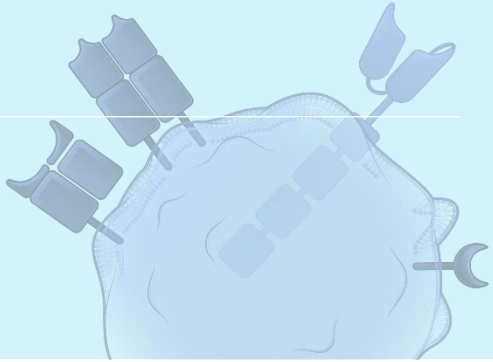
FDA breakthrough designation & EMA PRIME for EBV+ PTLD



ATA188

EBV T-cell immunotherapy for progressive multiple sclerosis (MS)

CAR T



ATARA BIO®

Multiple Sclerosis (MS) is a Debilitating Disease of the Central Nervous System with Few Treatment Options

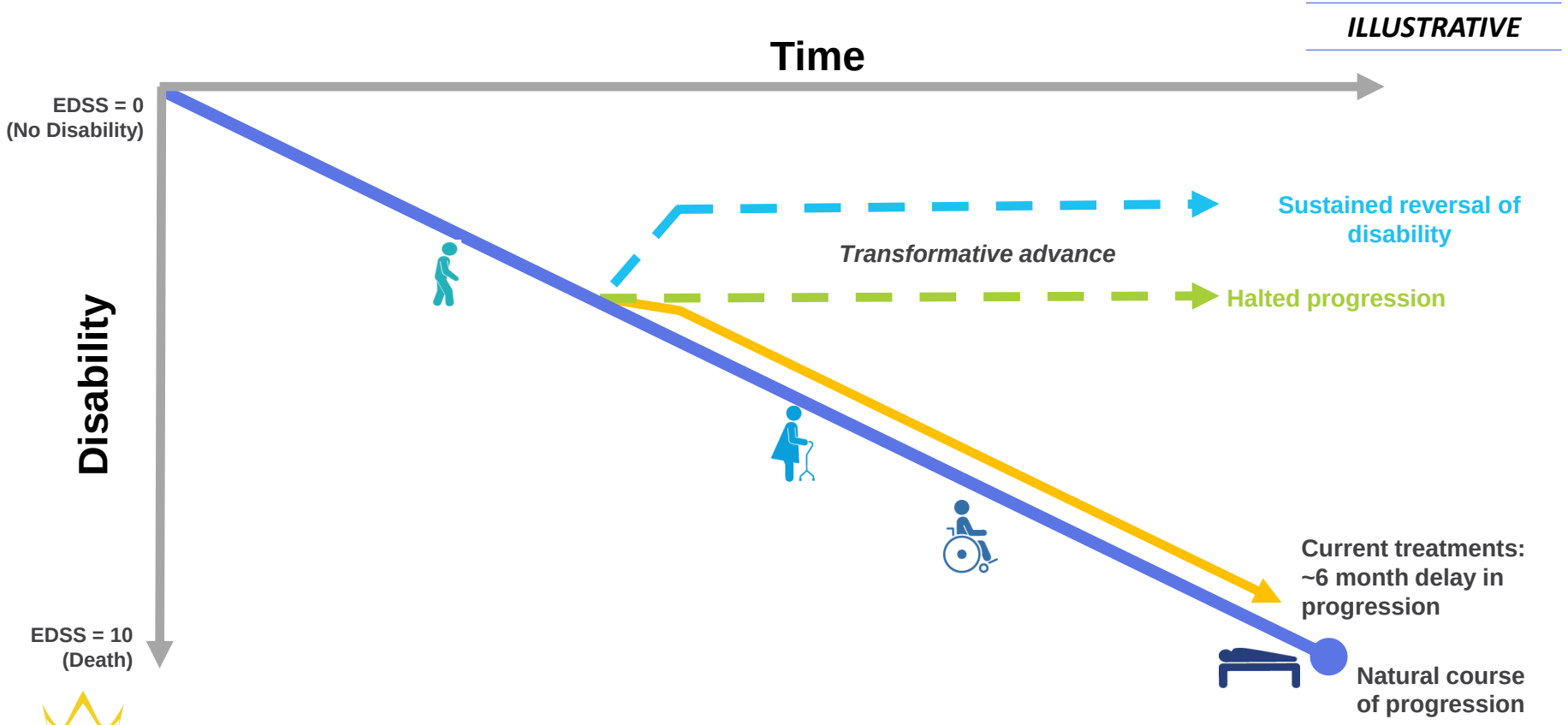
High Unmet Need Remains for Patients with Progressive MS

- Large patient population
  - **~2.3 million** patients diagnosed and living with MS worldwide
  - **~1 million** MS patients worldwide have a progressive form of the disease (PMS)
- For patients with progressive MS, prognosis is poor with current treatment options
  - Current therapies modestly delay progression but do not fundamentally alter its course
- Growing evidence that EBV has a major role in the pathogenesis of MS
  - Prior EBV infection is necessary for a patient to develop MS (1)(2)
  - MS may be mediated by B cells that are infected with EBV (3)

1. Ascherio A et al, *Nat Rev Neurol*. 2012;8:602-612. Endriz, J. et al., Neurol. Neuroimmunol. Neuroinflamm. (2017) 4, e308
2. Pender et al, Clin Transl Immunology. 2017;6(1):e126. Cencioni et al, Immunology. 2017;152:660–676
3. Harley et al, Nature Genetics 2018

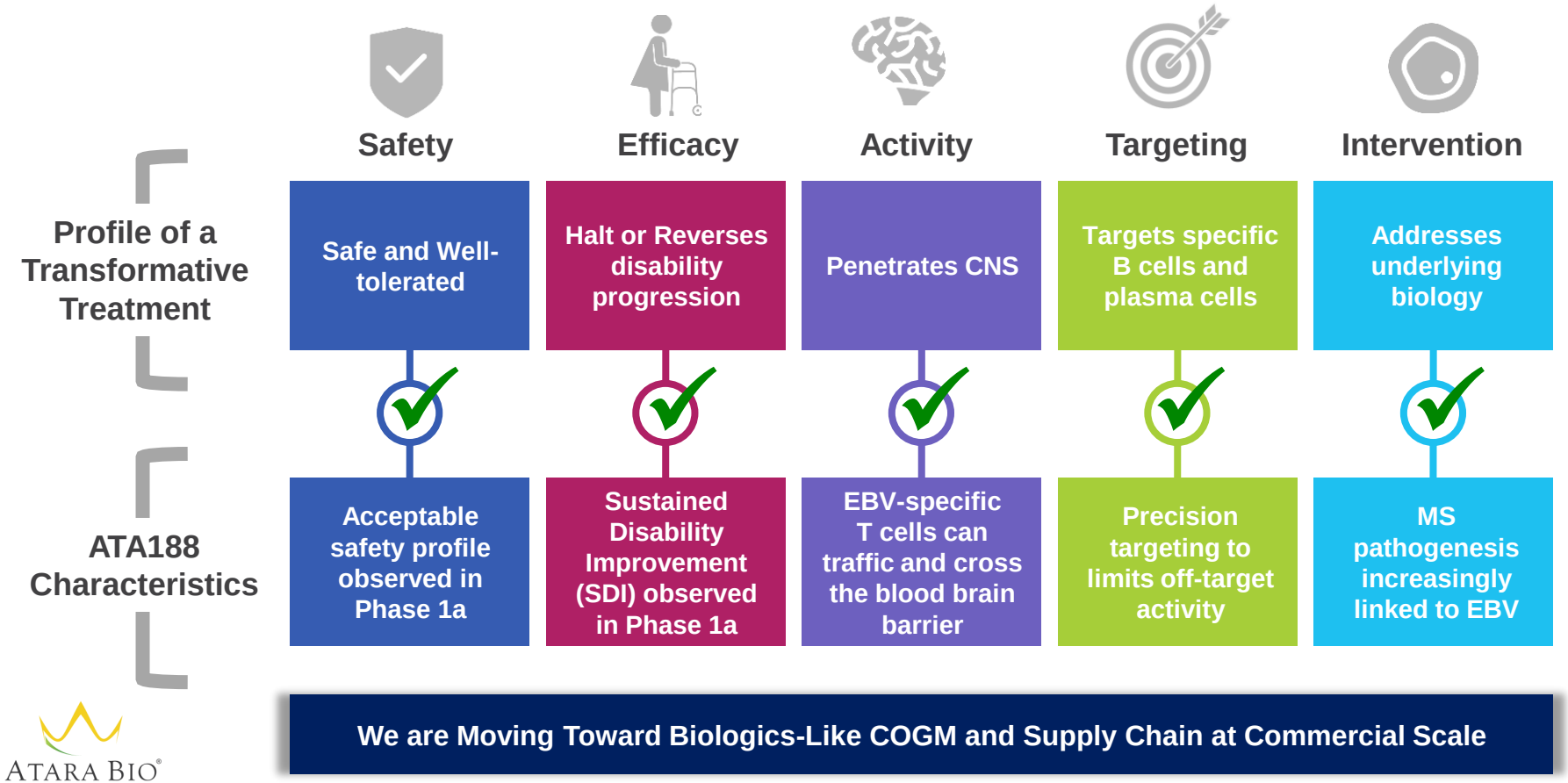
ATARA BIO®

What Could a Transformative Therapy in Progressive MS Look Like?



ATARA BIO®

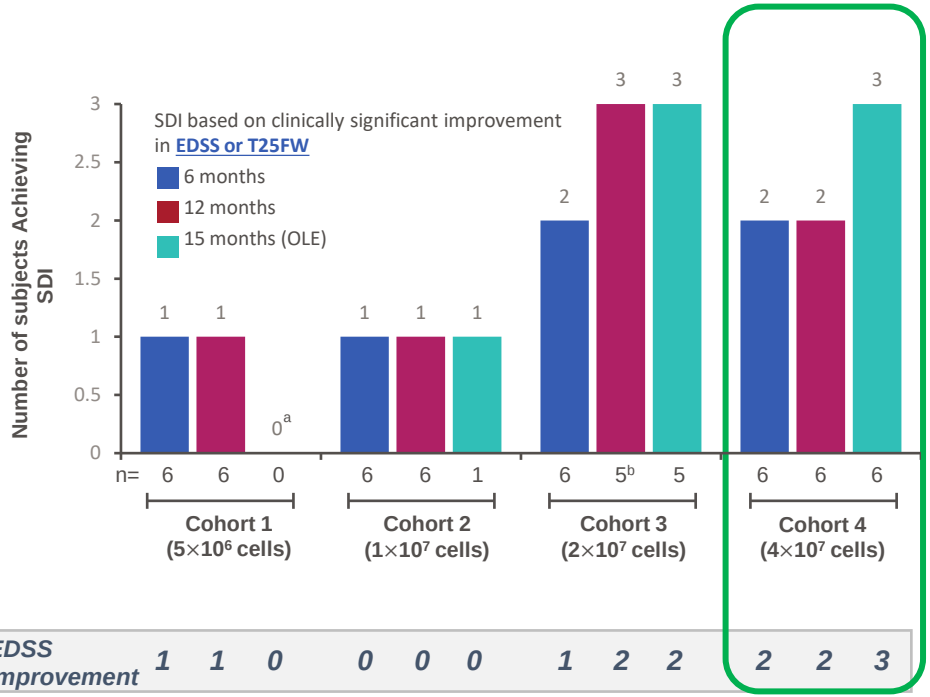
ATA188 is a Potentially Transformative MS Treatment



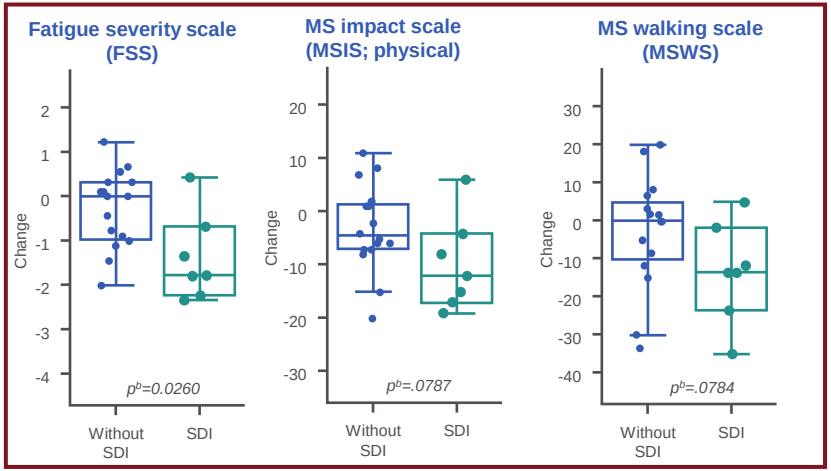
ATARA BIO®

Positive Ph1 data in Progressive MS Showing 50% Sustained Disability Improvement (SDI) in Cohorts 3 – 4 at 15 Months

Dose-related increase in subjects per cohort exhibiting SDI over 15 months



Patients achieving SDI had greater improvements on patient reported instruments assessing outcomes beyond disability



[a]The subject in Cohort 1 who met SDI criteria at 6 and 12 months did not enroll in the OLE. [b]1 subject in Cohort 3 was withdrawn, moved out of the country, and is lost to 12-month follow up.
Note: p values comparing SDI and no SDI at 12 months

Results Among Subjects in Cohorts 1–4 Who Met SDI Criteria Within the First 12 Months and/or During the OLE

Long-term SDI: As of October 2020, OLE data were available for 16 subjects:

- 6 of these subjects had SDI at 12 months, which was maintained at all timepoints evaluated during the OLE
- An additional 2 subjects who did not meet SDI criteria during the initial 12 months met it during the OLE
- 1 subject with SDI in the first 12 months did not enroll in the OLE, but is included in the table for completeness

EDSS, T25FW and 9HPT[a] results among subjects in Cohorts 1–4 who met SDI criteria within the first 12 months and/or during the OLE

Cohort	Subject	SDI (Yes/No)	Scale	Baseline	3 Months	6 Months	12 Months	15 Months	18 Months	21 Months	24 Months	27 Months	30 Months
1 (5×10^6 cells)	A (101-003)	Yes – 6 and 12 months	EDSS Score	4.5	3.0	3.0	3.0	Subject A did not enroll in OLE					
			ΔT25FW	–	–3%	+15%	–3%						
			Δ9HPT	–	–14%	–10%	–4%						
	H (103-001)[b]	Yes – 24 and 27 months	EDSS Score	5.5	5.5	5.5	5.5	–	–	5.0	5.0	3.5	–
			ΔT25FW	–	–11%	–22%	–19%	–	–	–31%	–41%	–38%	–
			Δ9HPT	–	+14%	–16%	0	–	–	–4%	–6%	–12%	–
2 (1×10^7 cells)	B (103-010)[b]	Yes – 6, 12, 15, 18, and 21 months	EDSS Score	6.0	6.0	6.0	6.0	6.0	6.0	6.0	–	–	–
			ΔT25FW	–	–21%	–37%	–38%	–32%	–30%	–29%	–	–	–
			Δ9HPT	–	+7%	+9%	+6%	–2%	+6%	–2%	–	–	–
3 (2×10^7 cells)	C (101-004)	Yes – 12, 15, and 18 months	EDSS Score	6.0	6.0	5.0	5.0	5.0	5.0	–	–	–	–
			ΔT25FW	–	–8%	–10%	–	–18%	–7%	–	–	–	–
			Δ9HPT	–	–6%	+12%	–	+14%	–14%	–	–	–	–
	D (103-007)	Yes – 6, 12, 15, and 18 months	EDSS Score	6.0	6.0	6.0	6.0	6.0	6.0	–	–	–	–
			ΔT25FW	–	–35%	–41%	–58%	–49%	–58%	–	–	–	–
			Δ9HPT	–	–12%	–19.6%	–19%	–23%	–10%	–	–	–	–
	E (103-008)	Yes – 6, 12, 15, and 18 months	EDSS Score	5.5	3.5	3.5	3.5	3.0	4.0	–	–	–	–
			ΔT25FW	–	–11%	–13%	–1%	–19%	–3%	–	–	–	–
			Δ9HPT	–	–2%	–21%	–12%	–19%	–5%	–	–	–	–
4 (4×10^7 cells)	F (210-001)	Yes – 6, 12, and 15 months	EDSS Score	6.5	6.0	6.0	6.0	6.0	–	–	–	–	–
			ΔT25FW	–	–1%	–11%	–3%	+53%	–	–	–	–	–
			Δ9HPT	–	–15%	–7%	–2%	–9%	–	–	–	–	–
	G (210-003)	Yes – 6, 12, and 15 months	EDSS Score	6.0	5.5	5.0	4.5	5.0	–	–	–	–	–
			ΔT25FW	–	+15%	–8%	–16%	–8%	–	–	–	–	–
			Δ9HPT	–	–13%	+17%	–7%	–3%	–	–	–	–	–
	K (210-006)	Yes – 15 months	EDSS Score	5.5	5.5	5.5	4.5	4.5	–	–	–	–	–
			ΔT25FW	–	+15%	–13%	+17%	+9%	–	–	–	–	–
			Δ9HPT	–	+11%	0	+1%	–13%	–	–	–	–	–

Clinically significant improvement
Trend for improvement/stable
Clinically significant decline
Trend for decline
Re-dosed for OLE - Cohort 3 dose

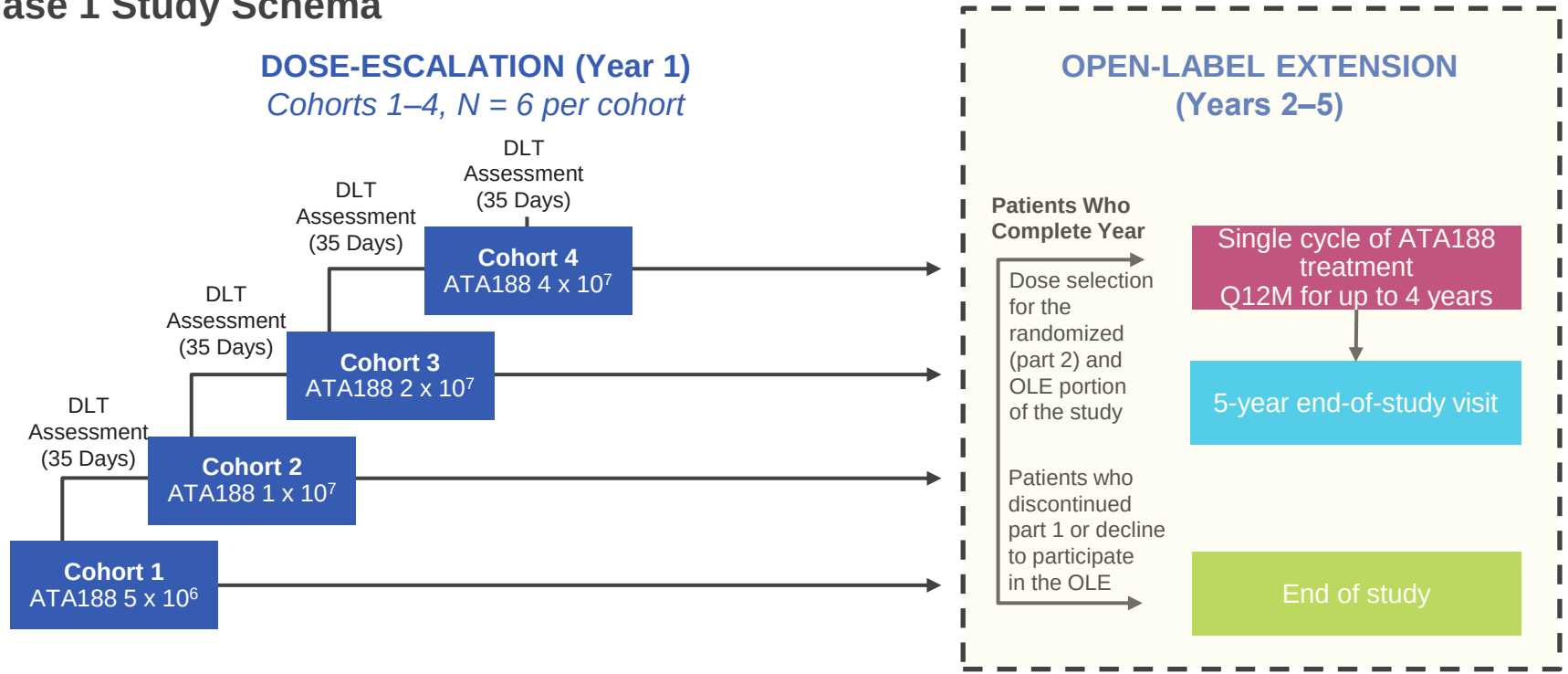
[a]Results in best hand. Time is anchored to baseline (ie, first dose received). [b]Following the 12-month assessment, the subject had a treatment gap before re-dosing for the OLE and did not undergo any scheduled assessments during the interim period.

Minimal clinically significant improvement: EDSS (–1 for baseline EDSS 3–5; –0.5 for baseline EDSS 5.5–7.0); T25FWT (–20%); 9-hole PEG test (–20%). Clinically significant decline is defined as the same magnitude as improvement but in the opposite direction.

ΔT25FW, change in T25FW from baseline; Δ9HPT, change in 9HPT from baseline; 9HPT = 9-hole PEG test time; EDSS = Expanded Disability Status Scale; OLE = open-label extension; SDI = sustained disability improvement; T25FW = timed 25-foot walk.

Ongoing Open-Label Extension Period will Allow Patients in Phase 1 Study to be Retreated Annually with ATA188

Phase 1 Study Schema



Currently 18 patients participating in OLE

ATARA BIO®

We Have Made Significant Progress with the FDA and are Advancing our Phase 2 RCT for ATA188, with an Interim Analysis Planned in H1 2022

FDA Registrational Feedback Received for Current RCT

- **Primary endpoint**: measuring disability improvement is acceptable; FDA preference for **EDSS**
  - Study duration should be at least 12 months and T25FW can be used as a supportive measure
- **Patient Population:** our definition of **non-active SPMS and non-active PPMS** is acceptable
- **Next Steps:** We plan to have additional dialogue with FDA on how to approach the target population in order to potentially amend the RCT for **registrational purposes**, and to apply for **expedited pathways for development**

Key Modifications Implemented in Amendment to Ongoing Phase 2 RCT

- Include **EDSS as the primary endpoint and increase the sample size to 80**

Planned Interim Analysis on Track

- We plan to conduct a formal **interim analysis** in H1 2022, including efficacy and safety, to confirm current development strategy

ATARA BIO®

RCT = Radomized Controlled Trial
EDSS = Expanded Disability Status Scale
T25FW = Timed 25-foot walk

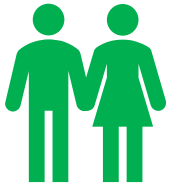
SPMS = Secondary Progressive Multiple Sclerosis
PPMS = Primary Progressive Multiple Sclerosis

Multi-Billion Dollar Potential for a Transformative Therapy in Progressive MS

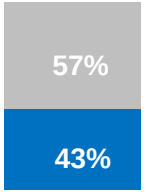
Estimated US Market Forecast for Progressive MS (2025)

5 YR CAGR: up to ~9%

~$5B - $7B PMS Overall Market Size



Transformative Therapy: ~25% - 50% Higher Treatment Rate[1]



Other therapies

Anti-CD20s

~45%+ Share for Best-in-Class Treatment[2]

Potential Annual US Revenue Opportunity in PMS of ~$3.5B+

Each 10% of share = ~$750M - $1B in Revenue

Sources: 2019 GlobalData MS Market Forecast; 2019 Decision Research Group MS Landscape and Market Forecast; Atara Analysis

[1] Based on reaching RRMS treatment level [2] Based on current anti-CD20 therapies or better

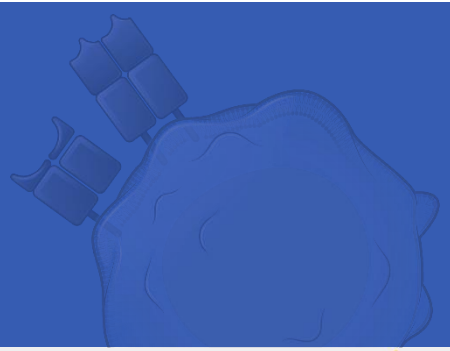
ATARA BIO®

Atara Strategic Priorities to Create Value: CAR T

Tab-cel® (tabelecleucel)

Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

FDA breakthrough designation & EMA PRIME for EBV+ PTLD



ATA188

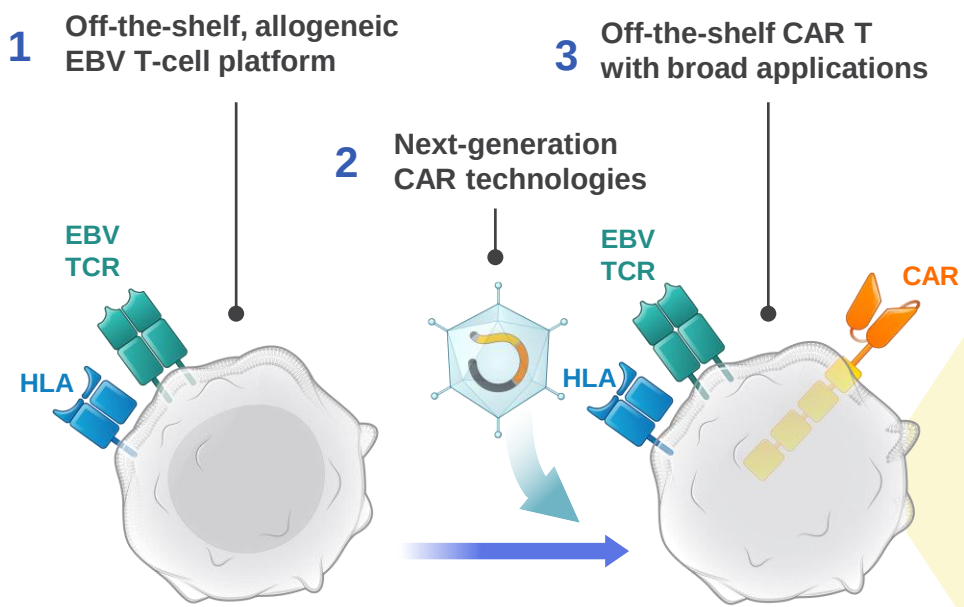
EBV T-cell immunotherapy for progressive multiple sclerosis (MS)

CAR T

- ATA2271/ATA3271 (Solid Tumors)
- ATA3219 (B-cell malignancies)
- Other CAR T

ATARA BIO®

Leveraging Our EBV Platform to Optimize CAR and TCR Therapies



Next-Gen CAR T Leveraging EBV T-Cell Natural Biology and Next-Gen Technologies

Next-Generation Technologies

Multi-targeted CARs

- Dual targeting with gating (“AND”/“OR”) to avoid on-target, off-tumor activity

Next-gen co-stimulatory domains

- Novel co-stimulatory domains which may offer less T-cell exhaustion leading to longer functional persistence

PD1 dominant negative receptor

- Provide intrinsic checkpoint inhibition to unlock solid tumor microenvironment
- We are leveraging this technology to create “Armored CAR Ts”

ATARA BIO®

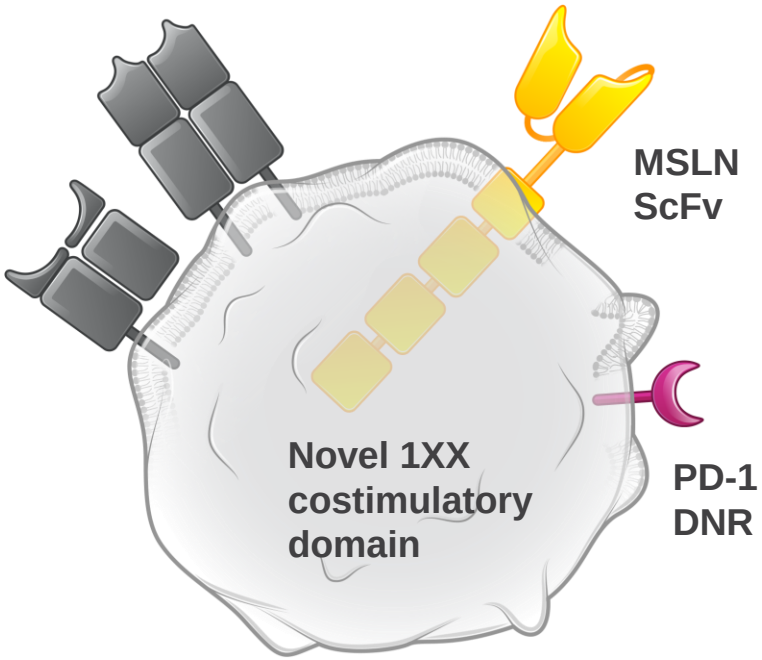
Atara Biotherapeutics and Bayer Enter Strategic Collaboration for Mesothelin-Targeted CAR T Cell Therapies For Solid Tumors

Worldwide license agreement and research, development and manufacturing collaboration to develop Atara's allogeneic off-the-shelf mesothelin CAR T program (ATA3271) and autologous program (ATA2271)

- Recognizes the leading position of Atara's technology platform and capabilities in allogeneic cell therapy
- Agreement is fundamental element of Bayer's new Cell & Gene Therapy strategy
- Bayer brings significant development & commercialization capabilities in oncology solid tumors, which complements Atara's leading allogeneic T-cell platform
- We believe this collaboration maximizes the opportunity for ATA3271, a novel CAR T with PD-1 DNR and 1XX costimulatory domain which has the potential to be a first-in-class treatment with an optimized design for solid tumors

- Atara will lead IND-enabling studies and process development for ATA3271 while Bayer will be responsible for submitting the IND and subsequent clinical development and commercialization
- As part of the transaction, Atara will also provide translational and clinical manufacturing services to be reimbursed by Bayer
- Atara will receive $60M in cash upon signing and is eligible to receive up to $610M in development, regulatory, and commercial milestone payments, plus tiered royalties up to low double-digit percentage of net sales

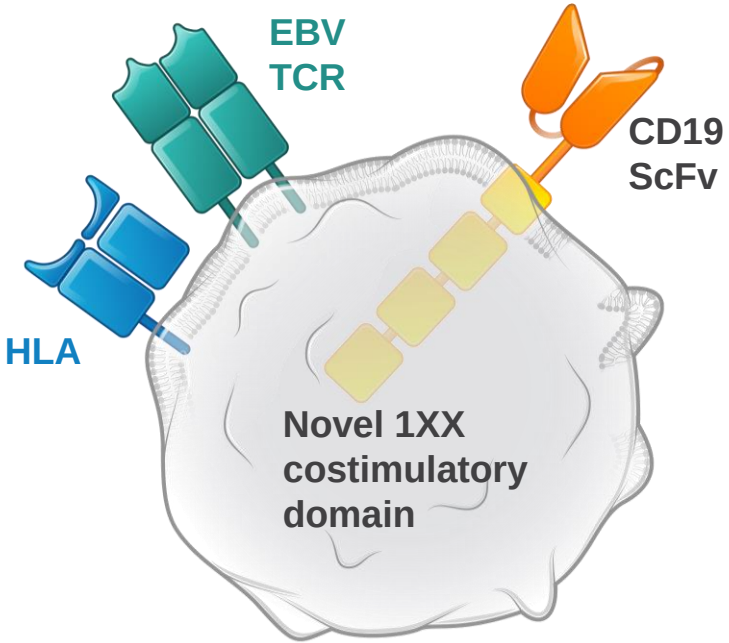
Entered Strategic Collaboration with Bayer to Develop Mesothelin-Targeted CAR T Program in Solid Tumors



- Mesothelin is a well-established target associated with aggressive solid tumors
- Unique ScFv that binds to mesothelin above cancer threshold
- Innovative next-gen CAR T technologies combining novel 1XX costimulatory domain and PD-1 Dominant Negative Receptor (DNR)
- ATA2271 was associated with less cell exhaustion, improvements in functional persistence, serial cell killing, and enhanced *in vivo* efficacy when compared with first-generation mesothelin CAR T therapy (AACR 2020)
- ATA3271: off-the-shelf, allogeneic EBV mesothelin CAR T, IND-enabling studies ongoing
  - First preclinical data presented showing potent anti-tumor activity without allo-reactivity *in vivo* (SITC 2020)

ATA2271 Phase 1 first cohort enrolled in Q1 2021 for patients with advanced mesothelioma; ATA3271 IND Submission Expected in Q2 – Q3 2022

Developing Potential Best in Class Off-the-Shelf Allogeneic CD19 Program for B-Cell Malignancies



- Academic program generated proof of principle for EBV T-cell platform potential to generate off-the-shelf, allogeneic CAR T therapies with high and durable responses, low risk of toxicity, and rapid delivery to patients
- Six patients received partially HLA matched EBV CD19 CAR T cells manufactured from third-party donors
  - 83% (5/6) of R/R B-ALL, NHL and CLL patients had durable CR with median follow up of 26.9 months
  - 100% response in CLL (1/1) and NHL (4/4)
  - Average HLA match 3-4: similar to Atara EBV T-cell oncology data
  - No dose-limiting toxicities observed with multiple doses administered
  - No CRS or neurotoxicity above Grade 2, no confirmed GvHD
- ATA3219: Next-generation off-the-shelf, allogenic CD19-1XX CAR+ EBV T-cell product containing a modified CD3ζ signaling domain, 1XX.
- Preclinical data demonstrate persistence, polyfunctional phenotype, efficient targeting of CD-19 expressing tumor cells both *in vitro* and *in vivo* (ASH 2020)

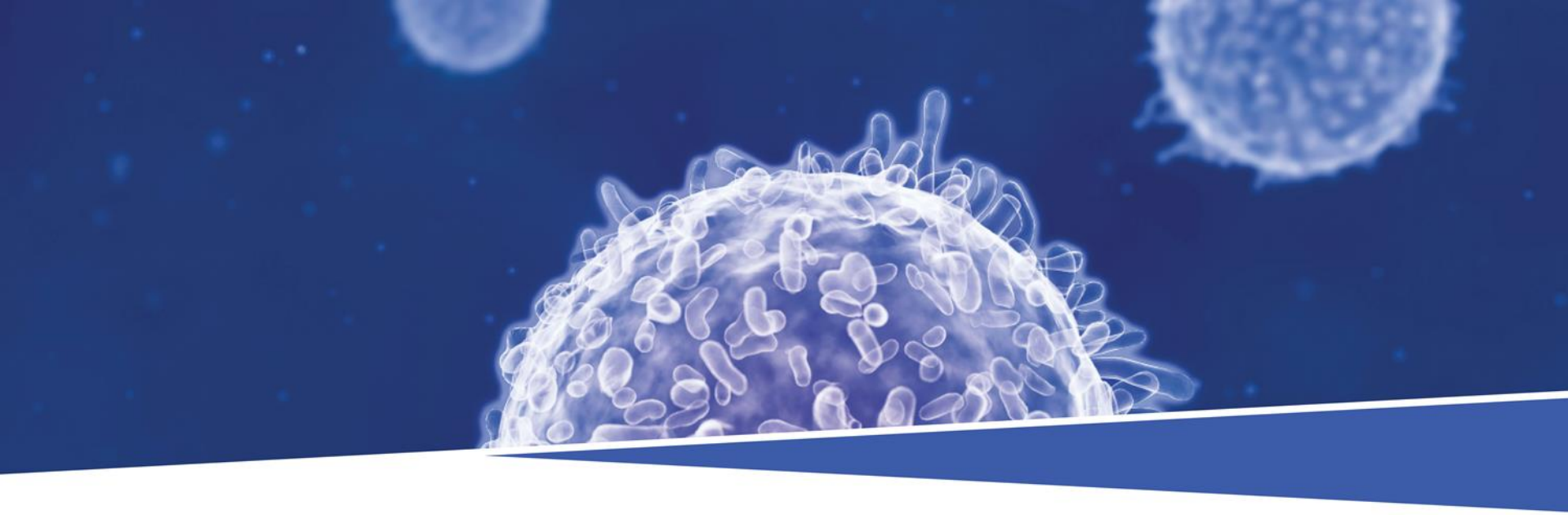
ATARA BIO®

Curran KJ, Sauter CS, Kernan NA, et al. Durable remission following "Off-the-Shelf" Chimeric Antigen Receptor (CAR) T-cells in patients with relapse/refractory (R/R) B-cell malignancies. Biol Blood Marrow Transplant. 2020;26(3):S89.

ATARA BIO®

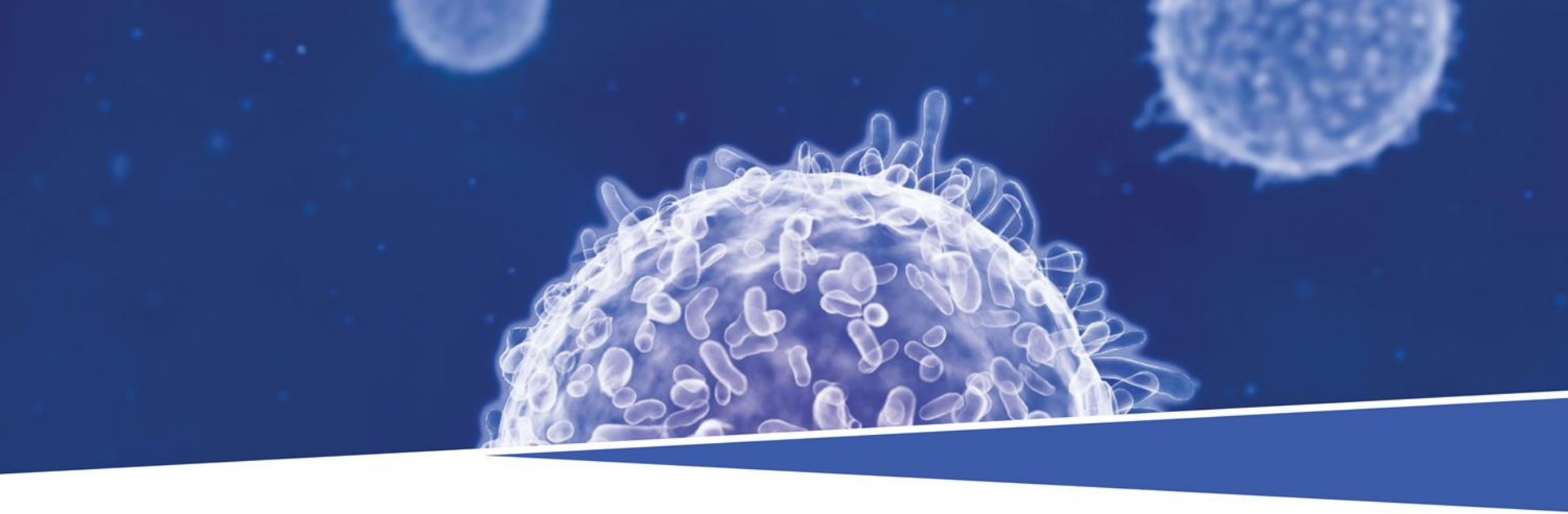
Thank You

Nasdaq: ATRA



Appendix

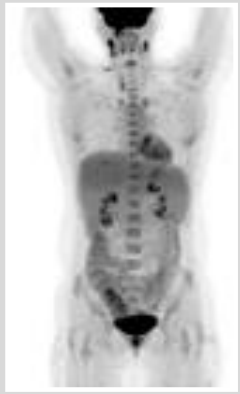
ATARA BIO®

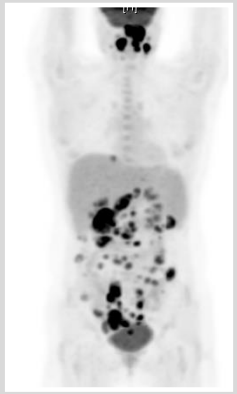


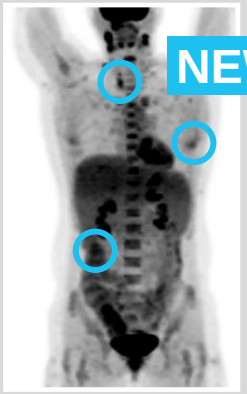
Tab-cel®

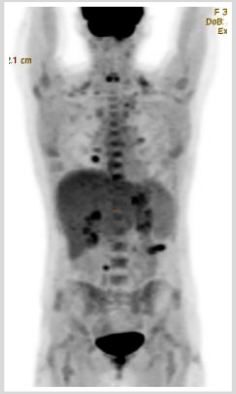
ATARA BIO®

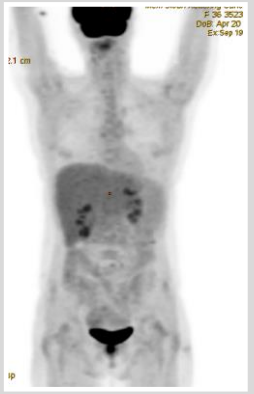
Tab-cel® – Off-the-Shelf, Allogeneic T-Cell Immunotherapy with Potential to Transform Treatment of EBV+ PTLD

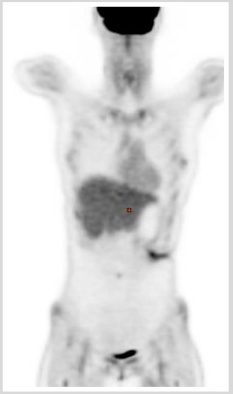












Week -10	Week -4	Week 0	Week 10	Week 15	Week 29
36-year-old with Fanconia anemia diagnosed with EBV+ PTLD	Increase in tumor burden	Disease progression after 3 cycles of rituximab	Tab-cel® response: rapid decrease of tumor burden	Continued decrease of tumor burden	Complete response (CR) after 4 cycles of tab-cel®

Expected survival **after rituximab failure: 16-56 days** in EBV+ PTLD following HCT(1)

ATARA BIO®

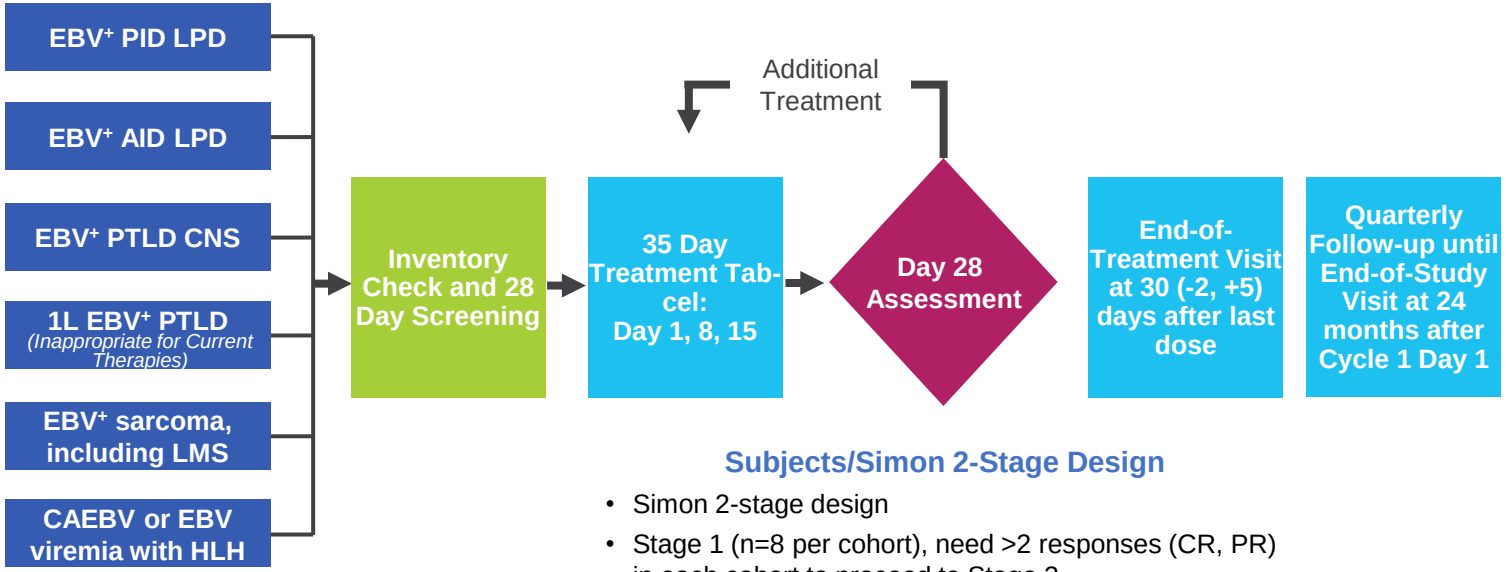
Prockop S, et al. Proc AACR 2015; 36 year-old woman with Fanconi anemia; Radiographic results from Phase 2 clinical study patient provided for illustrative purposes only to show how the clinical parameters above may correlate to the clinical presentation of a patient.

(1) Expected median survival for patients with EBV+ PTLD following HCT who have failed rituximab first line therapy is 16 to 56 days; Atara estimated 1-year survival based on analysis of Ocheni S, *et al.* EBV reactivation and post transplant lymphoproliferative disorders following allogeneic SCT. *Bone Marrow Transplantation*. 2008 Aug;42(3):181-6; Fox CP, *et al.* EBV-associated post-transplant lymphoproliferative disorder following in vivo T-cell-depleted allogeneic transplantation: Clinical features, viral load correlates and prognostic factors in the rituximab era. *Bone Marrow Transplant*. 2014;49(2):280-6.

Tab-cel® Has the Potential to Benefit Other Patients with EBV-Driven Cancers Beyond Previously Treated EBV+ PTLD

EBV-205 Phase 2 Study Design

All Cohorts Include 1L Patients



Subjects/Simon 2-Stage Design

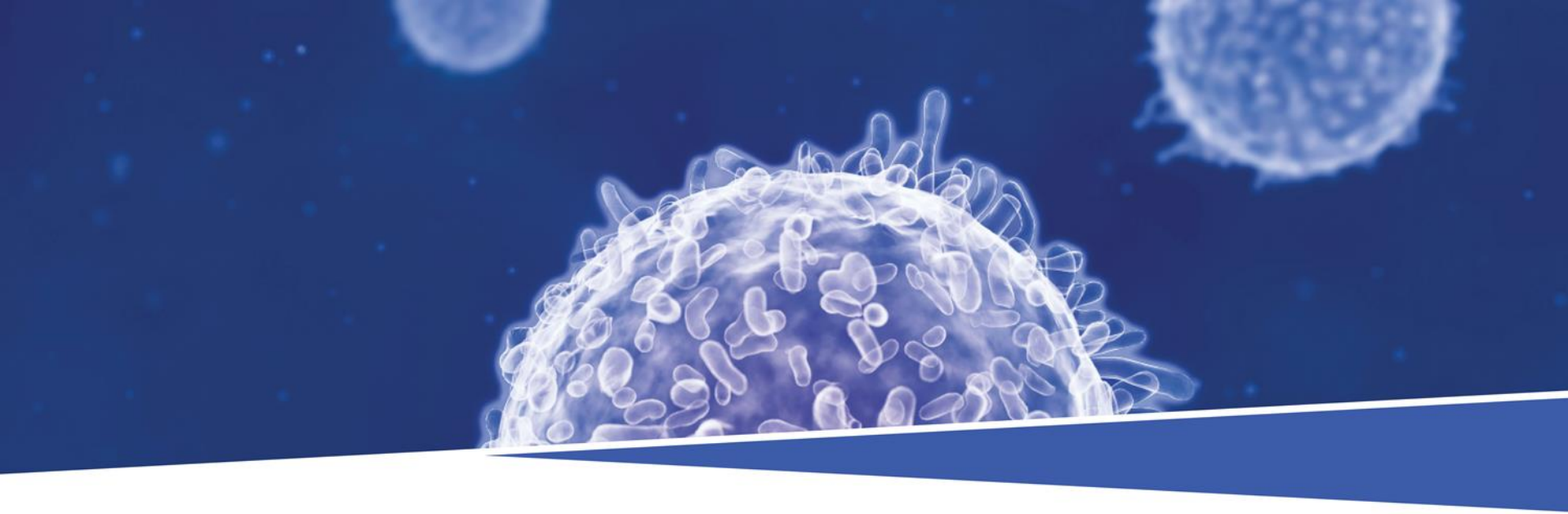
- Simon 2-stage design
- Stage 1 (n=8 per cohort), need >2 responses (CR, PR) in each cohort to proceed to Stage 2
- Depending on stage 1 response, N=14-38 subjects per cohort in Stage 2 for maximum 228 subjects

Initiated Multi-Cohort Study in Q3 2020

LPD = lymphoproliferative disease
PID = primary immunodeficiency
AID = acquired immunodeficiency
CNS = central nervous system
LMS = leiomyosarcoma
CAEBV = chronic active epstein-barr virus
HLH = hemophagocytic lymphohistiocytosis

ENDPOINTS

- Primary: Overall Response Rate (ORR)
- Secondary: Overall Survival (OS); Duration of Response (DOR)



ATA 188

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ATA188

A bold vision to transform MS therapy

- **Precision targeting to select EBV antigens** limits off-target activity
- Off-the-shelf T-cells **delivered from inventory**
- Phase 1 trial **successfully demonstrated safety** and **No pretreatment** required in the clinical trial protocol
- **Two-hour monitoring** following 5-10 minute IV infusion
- Administered as an **outpatient therapy**
- **Potential for improvement** of disease in progressive MS

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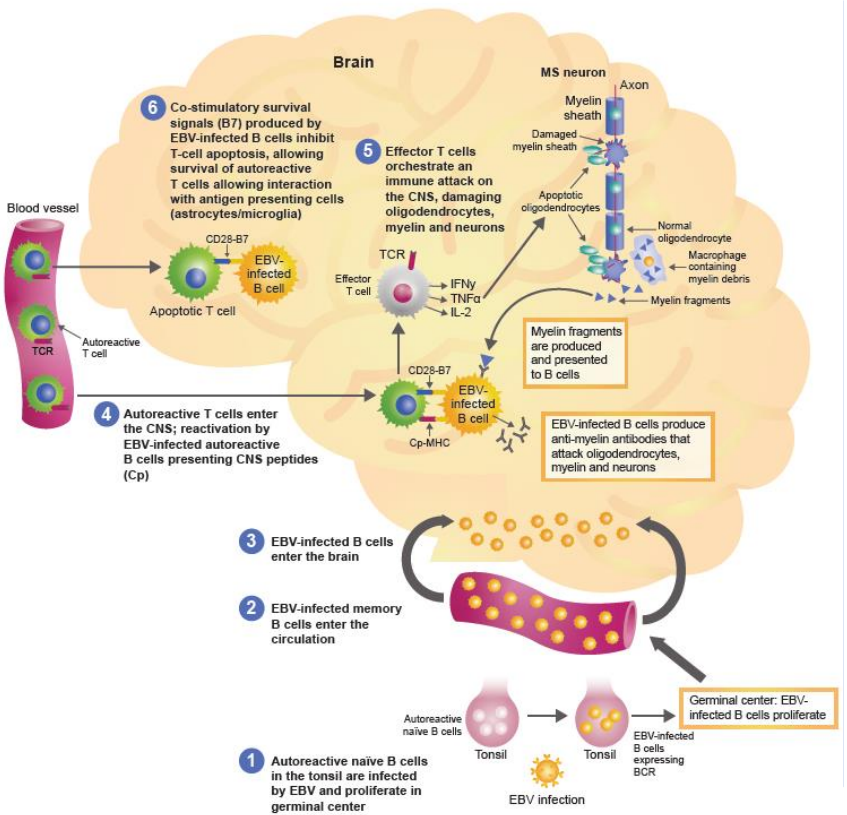
The Role of EBV in Multiple Sclerosis

Role of Epstein-Barr Virus (EBV) in Multiple Sclerosis

- EBV infection is strongly associated with the pathogenesis of MS[1-2]
  - EBV infection has been reported in up to 100% of MS patients[3-5]
  - High titers of antibodies to EBNA are associated with increased risk of developing MS[6]
  - MS risk is extremely low among individuals not infected with EBV, but it increases sharply in the same individuals following EBV infection[7-8]
  - Increased prevalence of EBV-infected B cells in brain tissue[9-10]
  - Alterations in EBV-targeted CD8⁺ T-cell immunity[11-12]
  - In a phase 1 study of patients with progressive forms of MS (n=10), treatment with autologous EBV-targeted T cells may delay MS progression and improve clinical symptoms[13]

Autoreactive B-cell Hypothesis

Defective elimination of EBV-infected B cells by cytotoxic CD8⁺ T cells results in the accumulation of EBV-infected autoreactive B cells in lymphoid structures and within the CNS.

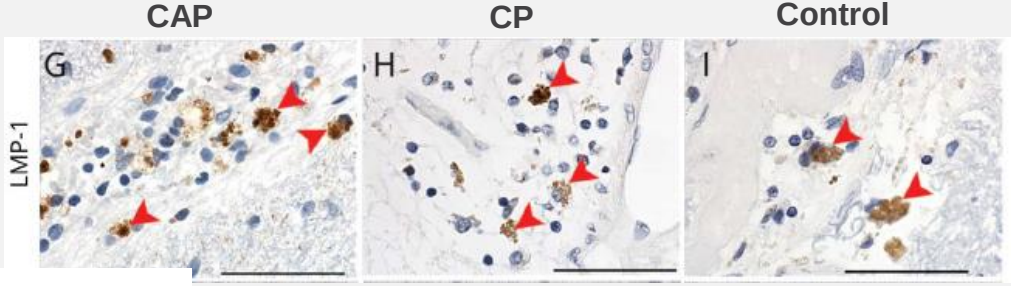


1. Bar-Or A et al. *Trends Mol Med*, 2020. 2. Pender MP et al. *Clin Transl. Immunol*, 2012. 3. Pakpoor J et al. *Mult Scler*, 2012. 4. Dobson R et al. *Neurol Neuroimmunol Neuroinflamm*, 2017. 5. Ruprecht K et al. *ECTRIMS*, 2018. 6. Munger KL et al. *Mult Scler*, 2011. 7. Levin LI et al. *Ann Neurology*, 2010. 8. Ascherio A et al. *Nat Rev Neurol*, 2012. 9. Serafini B et al. *J Exp Med*, 2007. 10. Moreno MA et al. *Neurol Neuroimmunol Neuroinflamm*, 2018. 11. Pender M et al. *Clin & Transl Immunol*, 2017. 12. Pender MP. *Trends Immunol*, 2003. 13. Pender MP et al. *JCI Insight*, 2018.

Growing Evidence that EBV Has a Major Role in the Pathogenesis of Multiple Sclerosis

- Prior EBV infection is necessary for a patient to develop MS [1,4]
- MS may be mediated by B cells that are infected with EBV [2]
- Defective elimination of EBV-infected autoreactive B cells by CD8+ T-cells results in accumulation in lymphoid structures and target organs implicated in MS, including the CNS, leading to inflammation.[3] This aberrant inflammation eventually leads to demyelination and axon destruction.
- As MS progresses, patient's ability to mount cell-mediated immune response against EBV decreases and is the worst in patients with progressive MS [3]
- EBV can activate and expand autoreactive memory CD4+ T-cells via molecular mimicry to antigens found in the brain (namely RASGP2) [5]
- EBV may promote the maintenance and expansion of autoreactive memory CD4+ T-cells via molecular mimicry [5]

Expression of LMP1 in MS and control subjects



Moreno MA. et al. *Neurol Neuroimmunol Neuroinflamm*. 2018;5:e466.

1. Ascherio A et al, *Nat Rev Neurol*. 2012;8:602-612. Endriz, J. et al., Neurol. Neuroimmunol. Neuroinflamm. (2017) 4, e308
2. Harley et al, Nature Genetics 2018
3. Pender et al, Clin Transl Immunology. 2017;6(1):e126. Cencioni et al, Immunology. 2017;152:660–676
4. Pender et al, Trends in Molecular Medicine 2020
5. Wang et al., 2020, Cell *183*, 1-18; Zamvil S. and Hauser M., 2021, NEJM *384*;4

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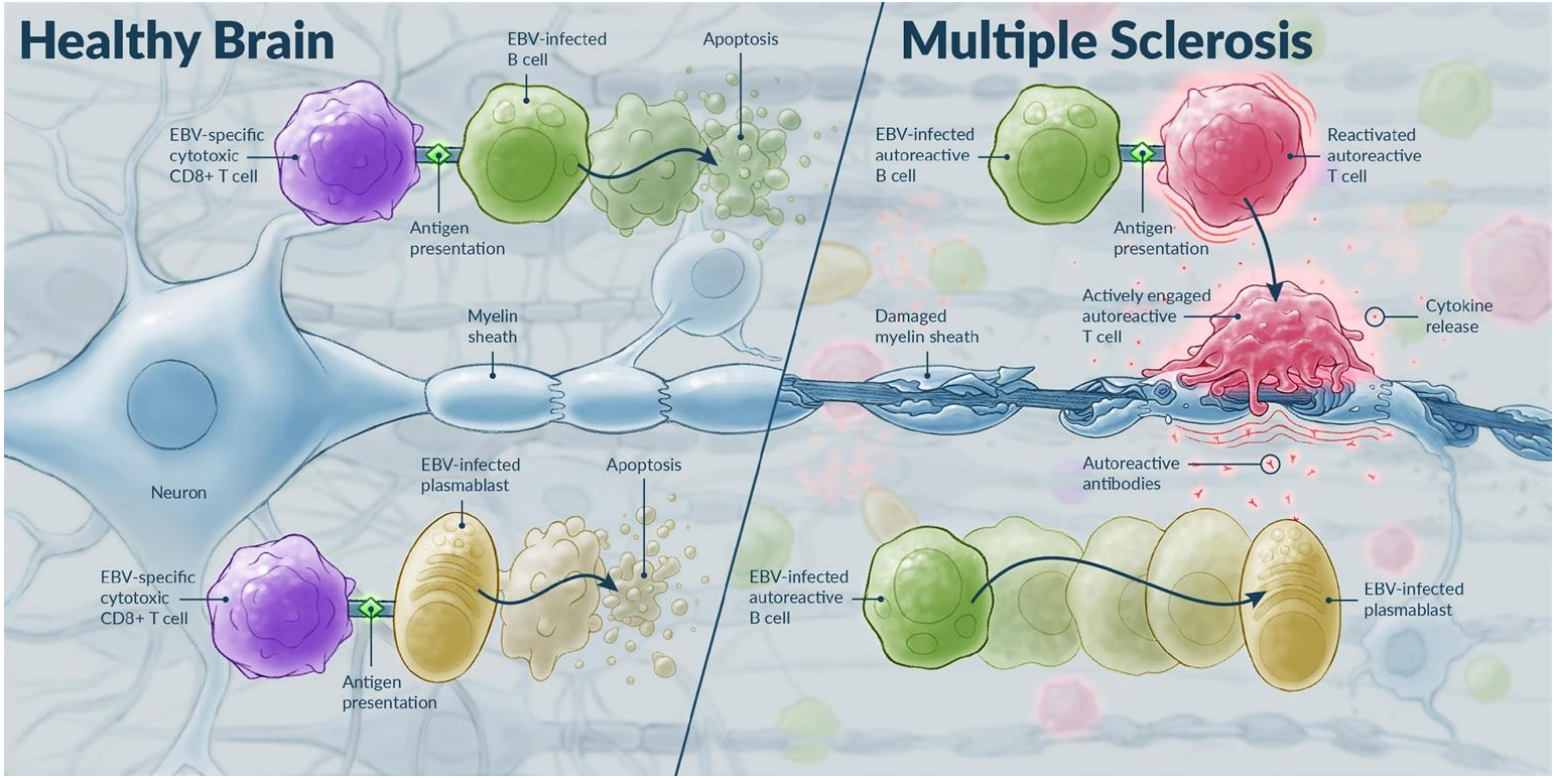
Auto-reactive EBV-Infected B cells and Plasma Cells Normally Controlled by EBV T-cells

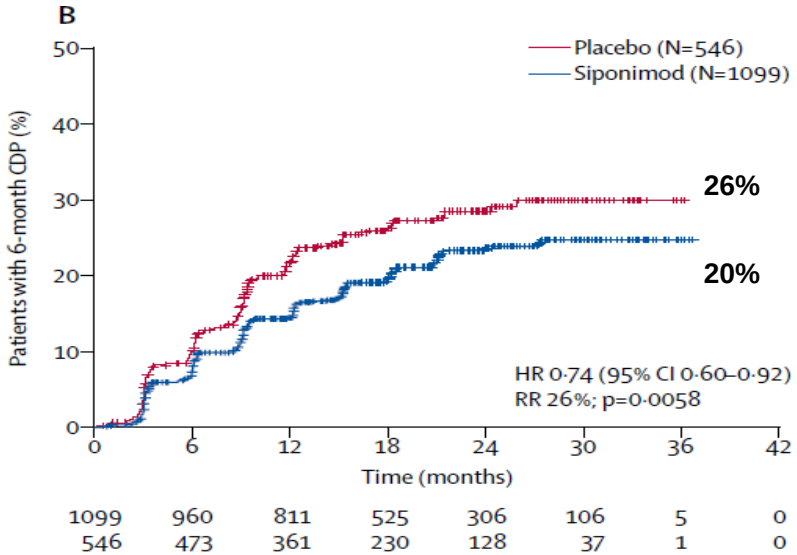


Adapted from Pender MP. *Neuroscientist* 2011; 17:351-367.

MS Treatment: Modest Efficacy Benefit from Current Options

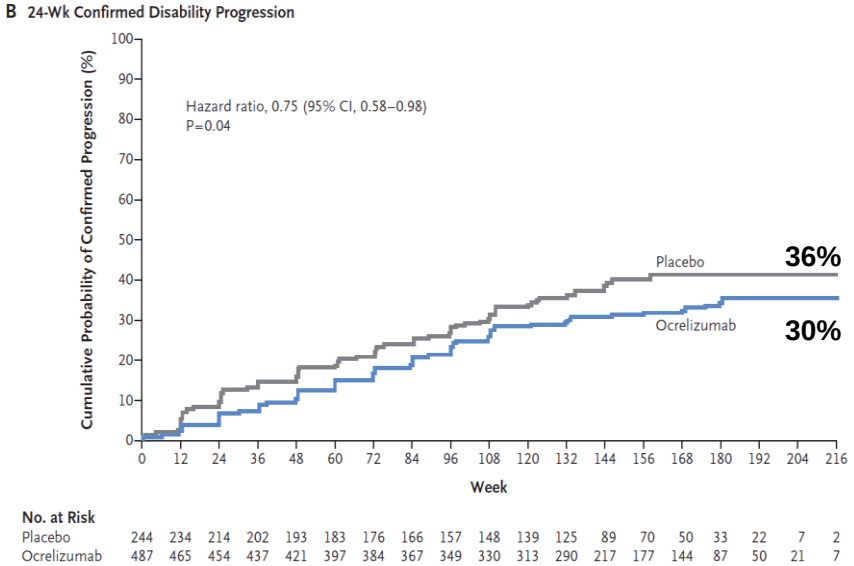
Active Secondary Progressive MS

6-mth CDP Siponimod vs. Placebo in SPMS (EXPAND)



Primary Progressive MS

24-Wk CDP Ocrelizumab vs. Placebo in PPMS (ORATORIO)



- ***Current therapies delay progression but do not fundamentally alter its course***
- ***B-cell hypothesis in MS validated by anti-CD20 therapy***

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Source: Kappos, D.L. et al, *Lancet* 2018; Montalban X. et al, *NEJM*, 2017

Based on Encouraging Clinical Data, We Have Increased our Investment in the ATA188 Program

ATA188 Investment Summary
Expanded to at least 80 patients in Phase 2 double-blind placebo-controlled study
Changed primary endpoint to EDSS improvement endpoint while maintaining other disability improvement and biological endpoints as secondary
Additional biomarker studies (including MOA)
Novel stirred-tank bioreactor manufacturing scale-up

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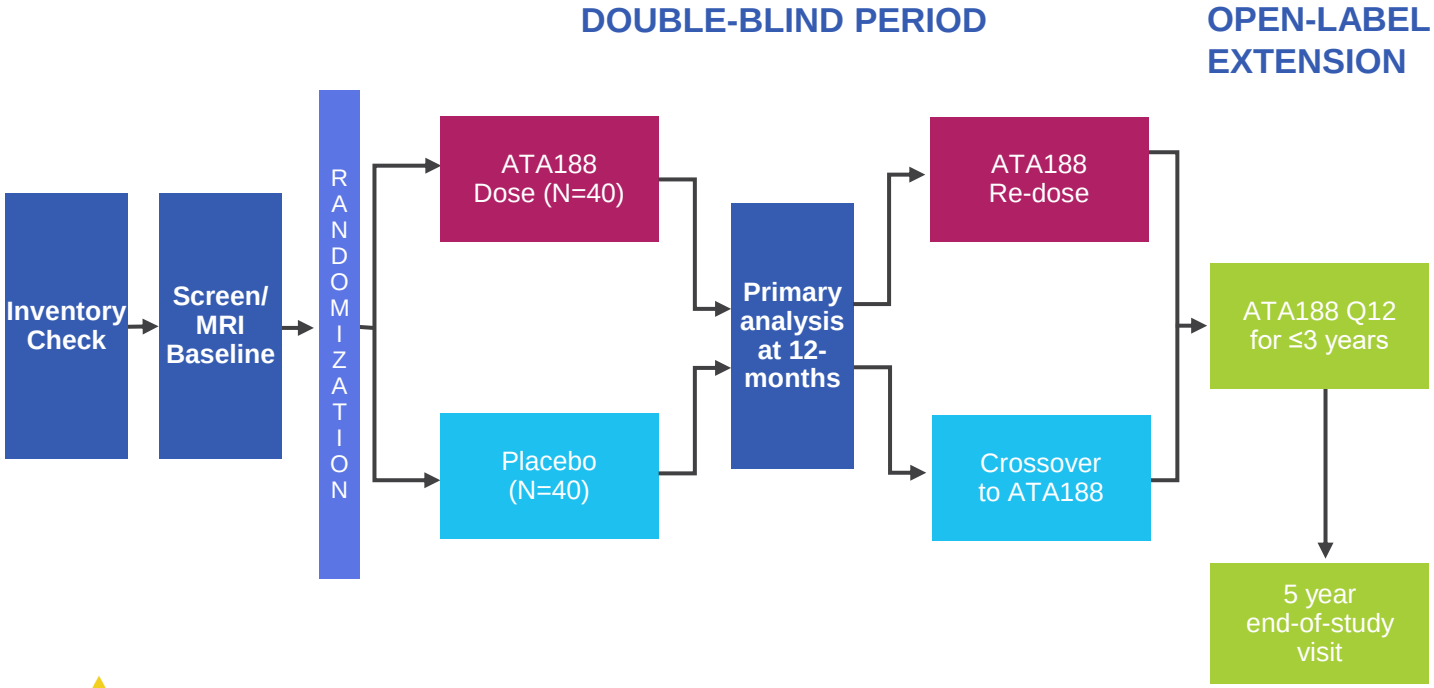
We Have Increased Investment and Updated Endpoints in the ATA188 Phase 2 Randomized, Placebo-Controlled Study in at Least 80 Progressive MS Patients

Phase 2 Randomized Placebo-Controlled Study Schema



KEY ENDPOINTS

- Primary (clinical): EDSS at 12m
- Secondary: SDI at 12m and SDI and EDSS at 15, 18, 21, 24m
- Secondary (biological) : change from baseline in CSF IgG index at 8m

Have selected Cohort 4 dose for RCT going forward; Plan to conduct Interim Analysis in H1 2022

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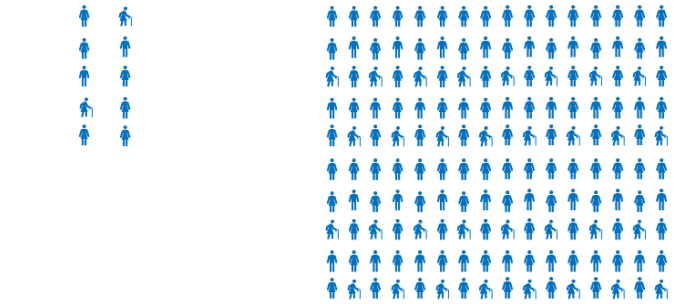
We Have Demonstrated Each Element of Our Platform to Support a Biologics-Like Supply Chain for ATA188 at Commercial Scale

Data confirms we can scale up manufacturing process into bioreactors

PRODUCTIVITY OF ONE LEUKOPAK

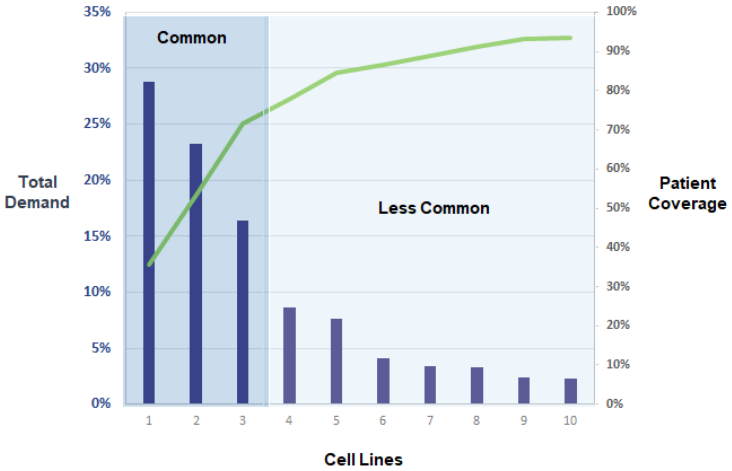
Today
up to ~2,500 doses

Near-term Improvement
up to ~**40,000** doses



Current inventory model projects coverage of ~95% of MS patients with ~10 cell lines

ATA188 COMMERCIAL DEMAND PROFILE



Proven scalable bioreactor manufacturing + Additional yield improvements in development → **Biologic-Like COGM** → Proprietary cell selection and efficient logistics + ~ 3-day delivery from inventory

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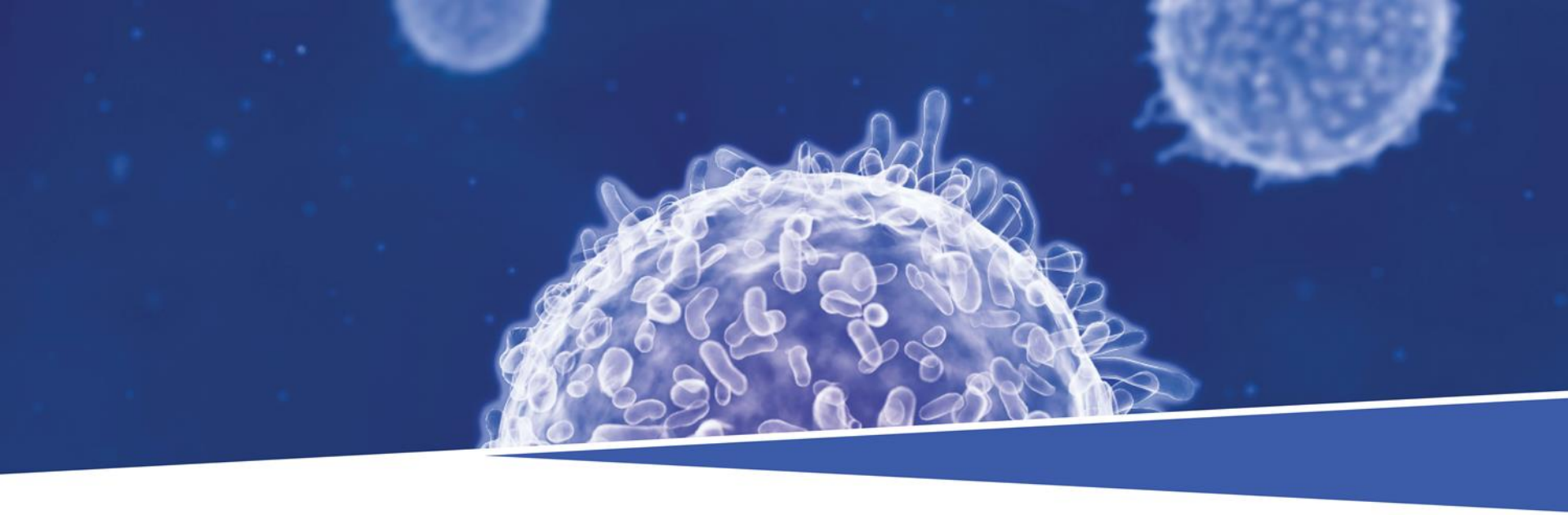
Note: productivity based on cohort 3 dose



CAR T Portfolio

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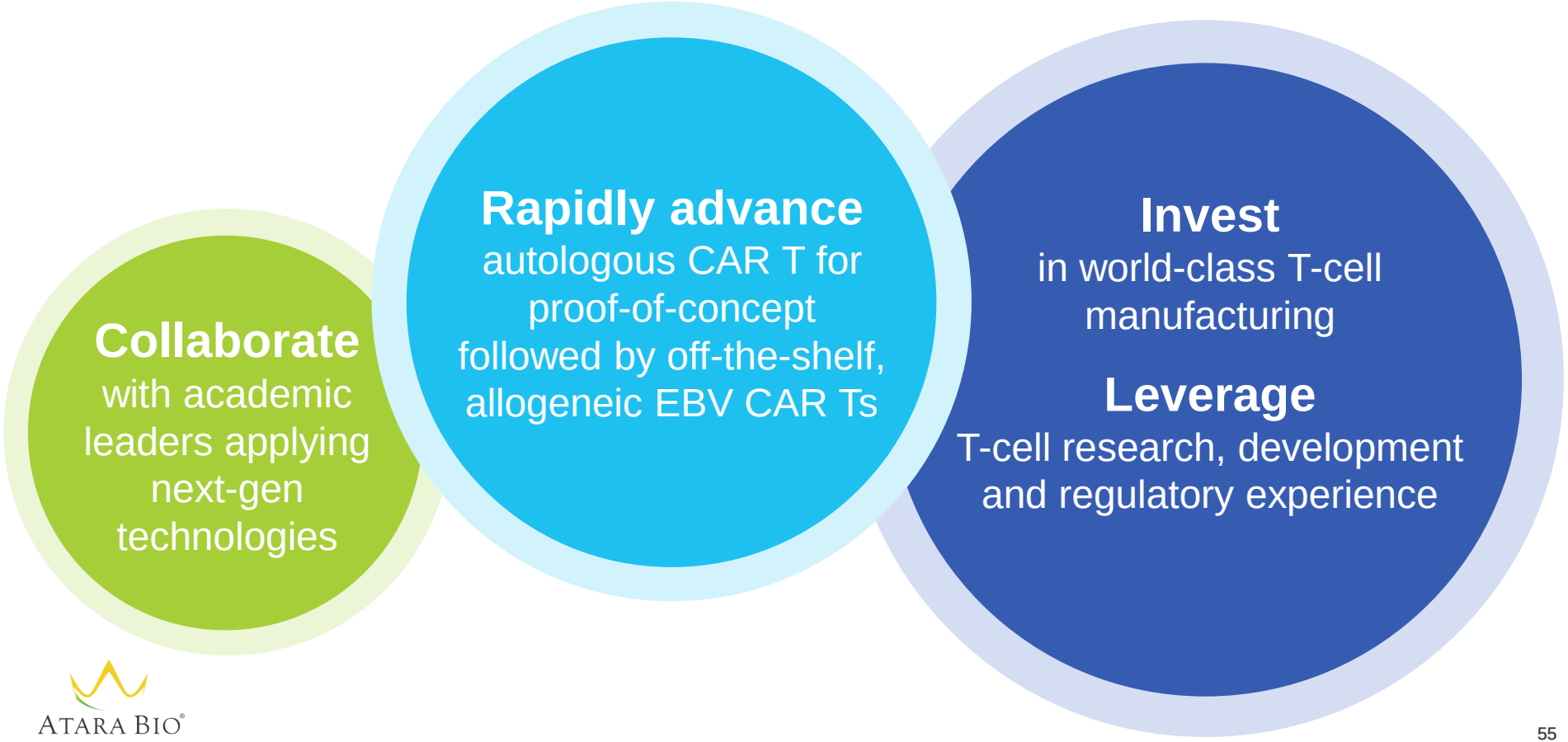
Atara Off-the-Shelf, Allogeneic CAR T Immunotherapy Strategy



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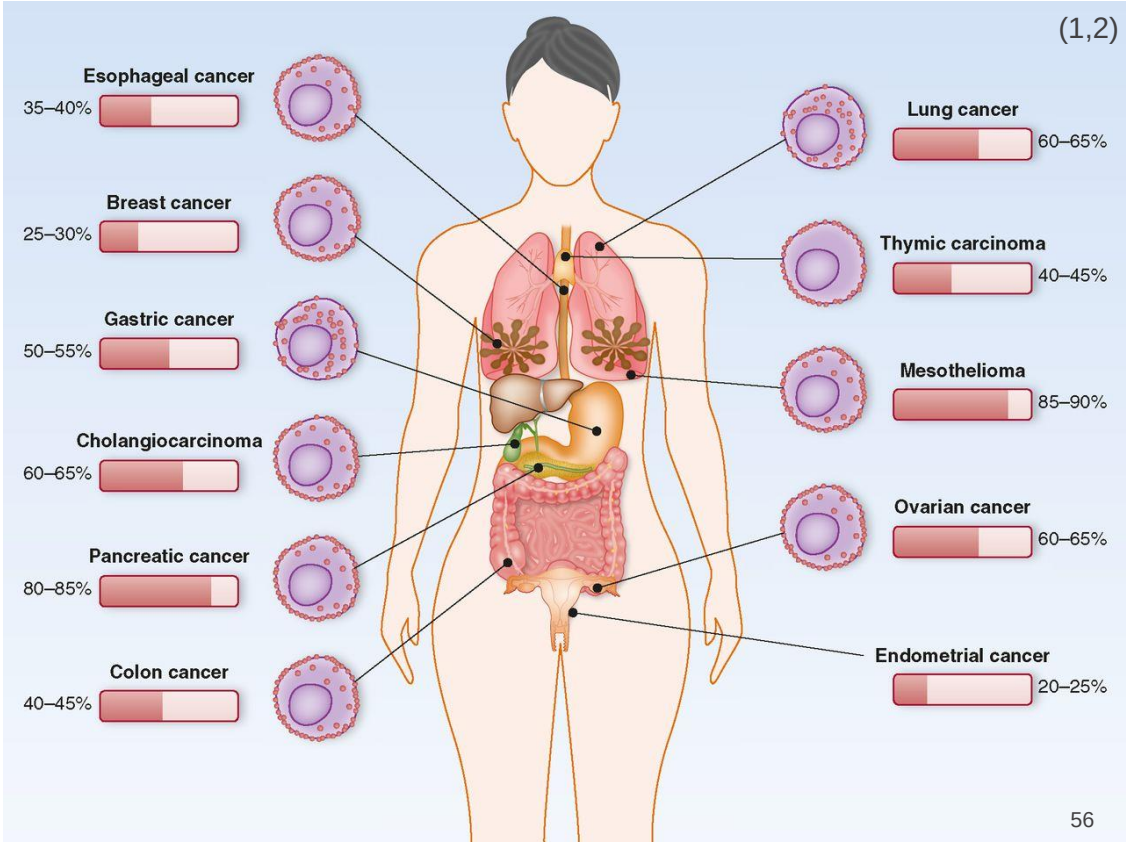
Exclusive License to Mesothelin-Targeted CAR T Immunotherapy for Solid Tumors from MSK

Mesothelin is an attractive target associated with aggressive solid tumors

- Aberrant mesothelin expression promotes cancer cell proliferation and confers resistance to apoptosis
  - Associated with mesothelioma, triple-negative breast cancer and non-small cell lung cancer
- Mesothelin-associated cancers(1)
  - Incidence: ~340,000 patients
  - Prevalence: ~2 million patients



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(1) Morello A, Sadelain M, Adusumilli PS. Mesothelin-Targeted CARs: Driving T Cells to Solid Tumors. *Cancer Discov.* 2016 Feb;6(2):133-46; U.S. incidence/prevalence.

(2) Frequency and distribution pattern of the mesothelin protein in solid malignancies.

Atara CAR / TCR Pipeline – Applying Next-Generation Technologies in Collaboration with Academic & Industry Leaders

	Indication	Target	Technologies	
ATA2271[1]	Autologous **Solid tumors**[2]	**Mesothelin**	**PD-1 DNR** **1XX co-stimulation**	BAYER; Memorial Sloan Kettering Cancer Center
ATA3271[1]	Off-the-shelf, allogeneic **Solid tumors**[2]	**Mesothelin**	**PD-1 DNR** **1XX co-stimulation**	BAYER
ATA3219	Off-the-shelf, allogeneic **B-cell malignancies**	**CD19**	**1XX co-stimulation**	ATARA BIO®
ATA2321	**AML**	**Dual-targeted undisclosed**	**Mut06 co-stimulation**	MOFFITT CANCER CENTER
ATA2431	**B-cell malignancies**	**CD19-CD20**	**Mut06 co-stimulation**	MOFFITT CANCER CENTER
Other CAR-T	**Infectious diseases**	**Undisclosed**	**1XX co-stimulation**	Memorial Sloan Kettering Cancer Center

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AML: acute myeloid leukemia; DNR: Dominant Negative Receptor; HPV: human papillomavirus; TCR: T-cell receptor

(1) Worldwide license agreement and research, development and manufacturing collaboration with Bayer to develop Atara's allogeneic off-the-shelf mesothelin CAR T program (ATA3271) and autologous program (ATA2271)

(2) Mesothelin is expressed at high levels on the surface of cells in aggressive solid tumors including mesothelioma, triple-negative breast cancer, esophageal cancer, pancreatic cancer and non-small cell lung cancer